DOCUMENT RESUME

ED 172 943 PS 010 698

AUTHOR Bowles, Dorothy, Ed.
TITLE Nutrition Education in Wisconsin Public Schools.
INSTITUTION Wisconsin State Dept. of Public Instruction, Madison.
SPONS AGENCY Food and Nutrition Service (DOA), Washington, D.C.
REPORT NO WWDPI-Bull-9258
PUB DATE [77]
NOTE 68p.; Not available in paper copy due to print quality

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Administrator Attitudes; *Food Service; *Nutrition; *Nutrition Instruction; *Public Schools; Research; School Surveys; State Surveys; Student Attitudes; Teacher Attitudes
IDENTIFIERS *Wisconsin

ABSTRACT

Objectives of this state survey of school food service programs in Wisconsin public schools focused on (1) nutrition education in the schools, (2) students' food selection practices, (3) improving nutrition education and (4) increasing awareness of nutritional considerations. Four questionnaires were administered to stratified, randomly selected, representative samples of food service managers, principals, teachers, and public elementary and secondary school students. Part I introduces the background and objectives of the study. Part II provides an overview. Part III reviews selected literature. Part IV describes the methodology of the study. Part V gives survey results. Food service managers' and supervisors' views about student involvement in lunch programs, principals' attitudes and knowledge about nutrition education and teachers' views on improving nutrition education. Stulent food intake patterns for six specific nutrients, influence of snack foods, and comparisons of eating patterns with weight were also reported. Data are presented in 22 tables and 10 figures. Questionnaires are appended. (Authcr/RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

PS

Nutrition Education in Wisconsin Public Schools

BEST COPY AVAILABLE

BEST COPY AVAILABLE

Wisconsin Department of Public Instruction / Barbara Thompson, Ph.D., State Superintendent

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Wisconsin Dept. of Public Instruction
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ED172943

PS010698

NUTRITION EDUCATION
in
WISCONSIN PUBLIC SCHOOLS

Wisconsin Food and Nutrition Services
Edward J. Post, State Director
Rachel N. Nutter, Project Director

Wisconsin Department of Public Instruction
126 Langdon St., Madison, WI 53702
Barbara Thompson, Ph.D., State Superintendent

Funded by U.S. Department of Agriculture
Food and Nutrition Service
Washington, D.C. 20250

Bulletin No. 9258

Acknowledgements

The Department of Public Instruction expresses appreciation to the individuals in Wisconsin public schools who cooperated and participated so willingly and capably to make this study a success.

Special recognition is given to:

individuals in the State Department of Public Instruction who helped prepare the proposal and the statistical samples required as well as provide time and effort in helping the project director complete the project: Fredrick E. Menz, PhD., Karen Becklin, Robert Gomoll, PhD.

the following individuals who helped design the four questionnaires;

Susan Cassens, Nutrition Section, Health & Social Services
Eleanore Irwin, Nutrition Section, Health and Social Services
Edward J. Post, Food & Nutrition Services, Department of Public Instruction
Jane Voichick, Ph.D., Department of Nutrition Science, University of Wisconsin, Madison
Terry Williams, Nutrition Section, Health & Social Services

the persons who helped to tabulate and interpret the data;

Dianne Giavannini, Bureau of Health Statistics, Health & Social Services
Eleanore Irwin, Nutrition Section, Health & Social Services
Jane Voichick, Ph.D., Department of Nutrition Science, University of Wisconsin, Madison

and the persons responsible for the graphs and artwork;

Vicki Fredrick, Management & Planning Services, Department of Public Instruction
Dianne Giavannini, Bureau of Health Statistics, Health & Social Services

The cover design was adapted by Vicki Fredrick from a poster created by a Riverside Primary School elementary student, School District of Menomonee Falls, 1974.

Recognition is also given to Dorothy Bowles, University of Wisconsin, Madison, Department of Journalism, for editing this document.

Table of Contents

Page

Acknowledgements ii

List of Tables iv

List of Figures vi

Part I - Introduction 1

Background of the Study 1
Objectives of the Study 2

Part II - Overview of the Study 4

Part III - Review of Selected Literature 5

Part IV - Methodology 9

The Sample 9
Study Time Schedule 10
Instrumentation 10
Data Collection and Analysis 10

Part V - Survey Results 12

Food Service Managers and Supervisors 12

Length of Service; Preparation for Position 12
Menu Planning 12
Views About Student Involvement in Lunch Program 14
Views Compared with Principal's Concerning Lunch Program 16

Principals 17

Attitudes and Knowledge about Nutrition Education 17
Views on Improving Nutrition Education 18

Teachers 19

Background, Attitudes, Responsibilities in Nutrition Education 19
Opinions about Improving Nutrition Education 21

Student Food Habit Survey 23

Food Intake Patterns for Six Specific Nutrients 24
Satisfactory Daily Eating Patterns 29
Eating Patterns for Regular Meals 30
Typical Breakfast, Lunch and Evening Meal 32
Influence of Snack Foods 33
Significance of Fortified and Enriched Foods 33
Height and Weight Averages for Wisconsin Children 33
Eating Patterns Compared to Weight 36

Bibliography 39

Appendix 41

List of Tables

		Page
TABLE 1:	Number of Years School Food Service Managers and Supervisors Have Worked in the Lunch Program	12
TABLE 2:	Number and Per Cent of Preparation Courses Taken by Food Service Personnel Compared With Number of Years Worked in School Food Service	13
TABLE 3:	Number of Different Main Dish Foods and Kinds of Vegetables Served During September 1973	14
TABLE 4:	Involvement of Students in the School Lunch Program As Seen By Cook Managers and Principals	14
TABLE 5:	Length of Student Lunch Periods in Wisconsin Schools As Reported By Students, Cook Managers and Principals	15
TABLE 6:	School Dining Environment as Reported By Students, Food Service Managers and Principals	15
TABLE 7:	Relative Importance of Reasons for Having a School Food Service, By Cook Managers and Supervisors (S) and Principals (P)	16
TABLE 8:	Ranking of Reasons for Having a Food Service Program, By Cook Managers and Principals (1 = Most Important)	16
TABLE 9:	Summary of Principals' Opinions on Including Nutrition in a Comprehensive Health Education Curriculum	18
TABLE 10:	Summary of Principals' Opinions On Whether Or Not the Department of Public Instruction Should Provide a Curriculum Guide for Teachers' Use	18
TABLE 11:	Numbers of Teachers Emphasizing Selected Biological or Social Topics in Nutrition Unit	20
TABLE 12:	Teachers' Opinions About Quality of Nutrition Textbooks or References, by Grade Level	21
TABLE 13:	Teachers by Grade Levels Indicating "Most Successful" Learning Activities	22
TABLE 14:	Students Who Ate Foods From the Milk Group at Regular Meals and Snacks	25
TABLE 15:	Students With a Satisfactory Daily Pattern From Regular Meals Only and Regular Meals Plus Snacks for Three Food Groups	30
TABLE 16:	Students Not Eating Lunch, by Grade Level and Sex	31
TABLE 17:	Underweight, Normal, and Overweight Children, by Grade Level and Sex	36
TABLE 18:	Per Cents and Numbers of Principals (by School Location and School Organization) Sampled in Principal Sample	41
TABLE 19:	Per Cents and Numbers of Teachers (by Grade and Location) Sampled in Teacher Sample	41

TABLE 20: Numbers of Schools (by type and grade) and Students (within school types and grades) Sampled in Student Sample 42

TABLE 21: Description of Large, Medium, and Small School Sizes for Non-Milwaukee Schools 42

TABLE 22: Description of Schools and Student Population Breakdowns for Milwaukee and Non-Milwaukee Schools 43

List of Figures

		Page
FIGURE 1:	Stratified Random Sampling of Number of Students	10
FIGURE 2:	Average of Three Days' Responses—Foods in Bread and Cereal Group	26
FIGURE 3:	Average of Three Days' Responses—Foods in Vitamin C Group	26
FIGURE 4:	Average of Three Days' Responses—Foods in Vitamin A Group	28
FIGURE 5:	Average of Three Days' Responses—Foods Containing Iron	29
FIGURE 6	Students With Satisfactory Daily Pattern	30
FIGURE 7:	Students Eating No Breakfast and Omitting Foods With Specific Nutrients From the Day's Food Intake (Regular Meals Only)	31
FIGURE 8:	Students Eating No Lunch and Omitting Foods With Specific Nutrients (Regular Meals Only)	32
FIGURE 9:	Comparison of Wisconsin-Iowa Weight Curves	34
FIGURE 10:	Comparison of Wisconsin-Iowa Height Curves	35

Introduction

The psychological impingement of how a person eats and is fed "has a larger impact on the personality than any other human experience," according to Bruno Bettelheim, distinguished child psychologist. "Eating experiences condition our entire attitude to the world, and again not so much because of how nutritious is the food we are given, but with what feelings and attitudes it is given. Around eating, for example, attitudes are learned, or not learned, which are the preconditions for all academic achievement, such as the ability to control oneself, to wait, to work now for future rewards," Bettelheim writes.[2] The majority of teachers, district and school administrators, and school food service personnel must be convinced that a food program is an integral part of a child's education program. Only after this fact is accepted are major changes likely to be made in mass feeding concepts and methods currently the rule in many of the nation's schools.

Children are well aware of adult attitudes towards school lunch programs, which are generally set up to require their conformity to certain adult standards of behavior, eating habits and food preferences. Many children do not participate because they are required to accept, and in some instances eat, all foods provided in the menus. If the conceptual approach to nutrition education is to have a meaningful impact upon the students' actions and food selection patterns, all educators and school food service personnel need to modify present attitudes and standards.

". . . Anytime we require students to learn what is not seen by them to be of value or anytime we require a single standard of behavior, in other words whenever we require conformity, we must rely on the use of extrinsic or external motivation. . ."[3] If children are to act differently through intrinsic motivation in the selection of more nutritious foods as the result of nutrition education, the lunchroom needs to be regarded by educators and school food service personnel as an effective learning center or classroom. Students are learning in the lunchrooms each and every day, but often they are not learning the attitudes and ideas educators would wish to convey. Foods prepared and served without consideration of the students' self-respect can poison young people's relationships to learning and the school.

School food service personnel need to be re-educated. They are often in a position to win parental and community support to improve the eating environment if they realize that they do not need to accept the status quo. The "self" concept of school lunch personnel needs to be changed. Short courses and workshops for school food service personnel should be planned to produce intrinsic motivation and to teach concepts which will prepare them for an active, involved role in nutrition education.

Before an effective nutrition education program can be instigated, an assessment of current procedures and attitudes is essential. This is one purpose of the study which follows. Data obtained from questionnaires submitted to principals, teachers, school food service managers, and students provide an insight into the status of nutrition education in Wisconsin. Survey results will be used to develop a plan to increase interest in teaching nutrition, with the ultimate goal of improving the health of Wisconsin school children. Survey results will not only help to create statewide interest in nutrition education but may well be used by other states throughout the country in developing similar nutrition education programs.

Background of the Study

A continuing prevalence of school food service programs which ignore basic nutritional knowledge and the eating habits and food preferences of involved students has been noted during supervisory assistance visits to schools throughout Wisconsin. Nutrition education was a vital component of each of three short courses planned for school food service personnel in 1968. It has been apparent that the short courses have not reached enough food service workers (approximately 76 per year) to make effective progress and desired changes in menu choices and the quality of foods served to students in schools throughout the State. It has also been apparent that the information provided in short courses for school personnel did not reach the other school oriented populations. School (students and faculty) and community residents should also be provided with sound nutritional information if changes in eating habits are to be effected.

Decisions to discontinue some lunch programs rather than expand to meet the nutritional needs of all of the students in the district, and increased lunch charges to the students, further indicated that some administrators, principals and teachers had no clear conception of the role the Type A Lunch Program could have in the school curriculum. To be effective, nutrition education must be provided all of these school populations.

An issue paper *Nutrition Education in the Classroom* was developed and presented to the members of

a Strategic Planning Task Force, a committee composed of members of the Department of Public Instruction, on March 26, 1970. The short term objective of the paper was "to point up the lack of awareness for the need for proper nutrition as evidenced by the increasing number of inadequate diets, by the attitudes of many school boards that lunch programs be self-supporting and by the influence advertising has on shaping the eating habits" of the students. The issue paper requested the formation of a seven-member task force committee to consider the implications of classroom teaching of nutrition and to make recommendations concerning the development of nutrition education curricula for students at every grade level as well as for teachers who would be responsible for nutrition instruction.[20]

The Strategic Planning Task Force recommended that the issue paper be referred to an advisory committee formed to implement Assembly Bill 1068. They indicated willingness to reconsider the issue upon receipt of reactions and recommendations from the advisory committee. State Superintendent William C. Kahl concurred with the Task Force suggestion and requested the Advisory Panel on Critical Health Problems in Education under the supervision of Miss Luida Sanders assume the responsibility for studying this issue. . . His letter stated, "My understanding of the legislative mandate to your panel is that nutrition education is one of several areas that comes within the broad category of health education."

Dr. George H. Handy, Secretary of the State Advisory Comprehensive Health Planning Council, in a letter to Superintendent Kahl (August 25, 1970) recommended that top priority be given to providing "new and innovative methods. . . and effective educational mechanisms which may be used to reach all groups in the community concerning the need for adequate nutrition." Dr. Handy further stated that the provision of funds alone would not solve the problem and suggested that education in nutrition, among other factors must be provided.

Twenty-four members of an Advisory Panel on Critical Health Problems in Education suggested by Superintendent Kahl were selected by an ad hoc committee to serve for one and two years beginning in November, 1970. The panel decided that the revised health education curriculum which was planned would answer the needs for nutrition education. Since that time, Wisconsin has joined Washington and Oregon in preparing and field testing a new Health Education Curriculum Guide which has a nutrition education component.

Interest in nutrition education by elementary teachers and administrators in the Green Bay District had been communicated to the Chief, Nutrition Section, Division of Health in 1970. A one-day workshop was planned which was cosponsored by the University of Wisconsin-Green Bay, the Green Bay Public School District, Green Bay Parochial Schools and District #4, Division of Health. The purpose of the workshop was to be exploratory, motivational and intended to sensitize participants to needs in the area of nutrition education. A second purpose was to obtain feedback from the participants on what guidance the Department of Public Instruction might provide in integrating nutrition education in the curriculum. It was the consensus of the planners that the results of this workshop would provide a basis for either expanding the workshop geographically throughout the State, or providing longer workshops or credit courses in nutrition education for elementary teachers.

The workshop was held on the University of Wisconsin-Green Bay, Deckner Campus, on May 12, 1971 with more than 50 representatives of the public and parochial elementary teachers in attendance. The time frame planned for the workshop did not provide adequate time to obtain the desired feedback from the participants as to their future needs and help desired. An evaluation of the workshop led the planners to conclude that other means should be sought which would more quickly provide needed information concerning the current status of nutrition education in Wisconsin public schools.

The possibility of obtaining federal funds from USDA under Section 6 of the National School Lunch Act, as amended, led to the development of a proposal which was submitted and received final approval by USDA in January, 1973.

Objectives of the Study

Specific objectives for the study were:

1. To obtain basic data on the attitudes and practices related to nutrition education in Wisconsin public schools as seen by school (a) attendance center principals, (b) teachers and, (c) food service supervisors and cook-managers.
2. To obtain current information about the food selection practices of Wisconsin public school students, kindergarten through twelfth grades.
3. To improve the nutrition education provided students in Wisconsin elementary and secondary schools.
4. To positively influence the interest in nutrition education among all school populations.

These objectives were to be attained by administering questionnaires to stratified, randomly selected, representative samples of three public school populations and all cook-managers and district supervisors.

Attendance center principals would be questioned concerning current nutrition education units taught in their schools and their perception of need for improvement. The attitudes, preparation, practices and opinions of teachers concerning nutrition education would be solicited. The training and attitudes of food service managers and supervisors regarding their role in nutrition education would be obtained. The food selection practices of public elementary and secondary school students would be ascertained through a three-day 24-hour food recall questionnaire. Copies of the four questionnaires may be found in the appendix.

Overview of the Study

During October, November and December 1973, a statistically representative structured random sampling of attendance center principals, teachers, school food service managers and supervisors, and students were surveyed to determine the current status of nutrition education and the eating patterns of students in Wisconsin Public Schools. Returns of 98 per cent (principals), 96.7 per cent (cook-managers), 93 per cent (teachers) and approximately 80 per cent (students) were obtained. All four survey instruments used the optical scanner for tabulation of results. No major opposition to the surveys or problems in administration of the surveys were encountered.

Analysis of data indicated a strongly felt need for nutrition education K-12. Principals thought the Wisconsin Department of Public Instruction should provide a nutrition education curriculum guide. Since 61 per cent of the teachers in the state were responsible for initiating their own curriculum, the need for a usable guide was considered of paramount importance. The majority (approximately 2/3) of the teachers indicated a willingness to improve their knowledge and teaching skills in nutrition education through in-service meetings, workshops or college credit courses. Only 1/3 of the food supervisors and managers perceived their role as resource persons for the teachers in nutrition education units.

The 24-hour, three-day food recall survey reinforced previous surveys made in other states. Many students' eating patterns did not contain enough foods considered good or fair sources of protein, iron, calcium and Vitamins A and C to provide a satisfactory daily eating pattern for each of these food groups. Secondary level students exhibited poorer eating patterns than did elementary children. Girls, grades 10-12 consistently had the poorest eating patterns of both sexes and all age groups. Of the students who took daily vitamin supplements, 98 per cent had a satisfactory daily eating pattern without the supplements. Students who went without breakfast did not tend to make up the iron, calcium and Vitamin C in the other two meals and snack periods.

Height-weight means and standard deviation curves were developed for Wisconsin children ages 5-18. All data on under, normal and overweight students were cross tabulated by nutrient food groups, snack foods, food supplements, satisfactory daily patterns, etc. None of these cross tabulations provided significant differences in eating patterns between under, normal and overweight children.

Review of Selected Literature

Only a sample of the selected studies which were instrumental in the planning of the Wisconsin survey are discussed below. Previous three-day dietary intake patterns for large groups of students have been reported by investigators concerned with the nutritional adequacy of food patterns for students of various ages.

The nutritional status of 1700 school children in three North Central states was assessed by Eppright, et al, (1955) in an effort to determine the effect of participation in the school lunch program. Three-day dietary records were kept by students with help from parents and teachers and instruction and supervision provided by trained dietitians. Serving sizes were described as accurately as possible. Average daily intakes of the various foods were tabulated by age, sex, population group and participation in the Type A school lunch. Many individual intakes of Vitamins A and C and one or more other nutrients were reported as being somewhat low.

Children whose mean daily nutrient intake conformed to the recommended dietary allowances (RDA) averages from 3 1/2 to 4 cups of milk, 1 serving of a food rich in Vitamin A, and 1 serving of a food rich in Vitamin C, 2 servings of meat or other protein foods and 5 1/2 servings of cereal foods.

Participation in the school lunch program tended to reduce the frequency of low intakes of most nutrients for boys and several nutrients for girls. These changes were especially notable for Vitamins A and C and calcium. However, the milk intake for the non-lunch girls was higher than for the girls who ate school lunch.[3]

Edwards et al., (1965) reported data from ten per cent of 6200 teen-age students who had filled out 24-hour food recall forms. Consumption of foods within food groups during meals and snacks were gathered and evaluated in terms of grade, school and sex. Comparison between the 1964 RDA and nutrient intake estimated from servings of the food groups; meat, milk, bread and cereals, fruits and vegetables rich in Vitamins A and C was made, with the study indicating a trend for young adults to substitute snack foods for meals missed during the day.[5]

Adelson (1968) had the responsibility for planning the 1965 USDA household food consumption survey. She reported that 20 per cent of American household members had "poor" diets and only 50 per cent had "good" diets. Diets which provided less than 2/3 of the allowance for one or more of the nutrients studied were rated "poor". Diets were rated "good" which met the RDA for protein, calcium, iron and Vitamin A, thiamin, riboflavin and ascorbic acid. The changes in dietary levels were due primarily to decreased consumption of milk and milk products, and fruits and vegetables rich in Vitamins A and C.

In the North Central region, which includes Wisconsin, more diets were rated "poor" in 1965 than in 1955 due to lower consumption levels of calcuim and Vitamins A and C. Publication of survey results indicated that 25 per cent of the diets in this region had less than 2/3 of the recommendation for Vitamin A value. Approximately 30 per cent of the diets in the North Central region had less than 2/3 of the RDA for Vitamin C. If the 1968 RDA were used in place of the 1963 revisions, ten per cent more families would have met the Vitamin C RDA while ten per cent or more would have failed to meet the recommendations for iron and thiamin.[1]

Lund and Burke reported the same dietary deficiencies. For Vitamins A and C, particularly, a wide variability of intake was noted indicating these nutrients were problems to a relatively large portion of the fourth grade children surveyed. The low intakes of these vitamins were associated with low consumption of vitamin rich fruits and vegetables. Vitamin A was associated primarily with the mother's attitudes towards particular fruits and vegetables considered excellent sources of this vitamin. Children most likely to use vitamin supplements were children who already had adequate nutritional diets.[4]

A report of Oklahoma food habits survey was made by Dobbins (1970). Members of the School Lunch and Home Economics Divisions of the State Department of Education and staff from six state teachers' colleges, surveyed approximately ten thousand school children in 1966-67. The survey was made for five age groups in grades 1-12. Because of incomplete answers on questionnaires, results were reported for only 62 per cent of the students surveyed, or approximately 6,200 students. No mention was made of what grades or age groups were most affected by the 38 per cent not accepted. The sampling was not selected to be representative of the state student population or of particular grade level [illegible] populations. Results were possibly biased by [illegible] who announced the survey prior to its actual presentation. In the Oklahoma study, therefore, children may have been influenced in their responses.

When the number of servings of foods reported were compared with the 1964 RDA, 40 per cent of all students consumed inadequate amounts of Vitamins A, C and calcium. Approximately 8.6 per cent consumed less than 1/3 of the RDA for Vitamin C. The youngest children consumed smaller amounts of all nutrients than older children.[6]

In October 1969, the Massachusetts Department of Education, Bureau of Nutrition Education and School Food Services, conducted a statewide one-day food intake survey of public school children in grades 1-12. The survey results were reported by Callahan in 1971. The sample included each tenth school selected from a list of public schools. Additional schools were selected to meet the economic parameters of the survey objectives.

Survey questionnaires were sent to 272 schools with a total enrollment of 100,000 students. Approximately 80,000 forms were received from 234 schools. Only 54,000 forms from students grades 4-12 were included in the school lunch survey; 50 per cent of each boys and girls. Approximately 44,000 students had the Type A lunch available in their schools. No claim was made that the final sample was statistically representative of the state public school population.

Two new survey forms were developed which speeded tabulation of answers by processing the sheets through an optical scanner. An abbreviated instrument with hand drawn pictures of some of the foods listed was used for children in grades 1-3. This was the first recorded attempt to obtain food intake data on a scanning form from primary school children. A more detailed form was developed for students from grades 4-12.

Training sessions were held in 13 areas of the state for teachers, health educators, principals and other school personnel who would be responsible for administering the questionnaires. School lunch personnel were not involved in order to prevent any changes of lunch menus which might affect results. Written instruction sheets for teachers and students were included with the questionnaires.

One of the objectives of the survey was to determine the extent to which students consumed foods which meet the basic four recommendations. Only 45 per cent of the children reported eating the recommended four or more servings of fruit and vegetables the day of the survey. Of the students eating a Type A lunch, 55 per cent met the recommended number of servings of these foods. At all grade levels children participating in the Type A lunch had better records for both Vitamins A and C than children who brought lunches from home or bought their lunches elsewhere.

On the day of the survey, only 53 per cent of the children in grades 4-12 ate a satisfactory lunch. The criteria of a satisfactory or good lunch was based on the Type A lunch requirements of at least 2 ounces of cooked meat or other protein such as cheese, eggs, beans; 3/4 cup of fruit and/or vegetable; 1 slice enriched bread; 1 teaspoon butter or margarine; 1/2 pint of milk. Approximately 58 per cent of the boys at the 10-12 grade level were eating a satisfactory lunch compared with only 47 per cent of the girls. Fifteen per cent of the girls and nine per cent of the boys at those grade levels did not eat any lunch.

Of the almost 80,000 children surveyed, 24 per cent did not eat an adequate breakfast of fruit or juice, cereal or protein food, bread or equivalent, milk or milk drink. Thirteen per cent ate no breakfast the day of the survey. Of the junior high age children only four per cent had consumed a good breakfast. Among high school age children the figure had decreased to only three per cent.[4 5]

The need for information on the status of health instruction in the nation's public schools promoted a significant, well planned survey in 1961-63 which was directed by Elena Sliepcevich. A multistage, stratified cluster procedure was devised by the Research Division of the National Education Association and used in selecting the samples. Public school systems were grouped in four strata (large, medium, small, very small) according to enrollment.

A sample of systems from each stratum with 300 or more students was selected by random procedure. The total sample (135 school districts) consisted of 12 large, 23 medium and 100 small systems. A cluster design sampling of classes of students (6th, 9th and 12th grade) comprised the second phase of the study. Participating school systems were asked to select at random three classes from each grade level. Approximately 94 per cent of the systems returned completed responses for the first phase and 91 per cent and 90 per cent respectively of systems with elementary and secondary grades participating in the second phase of the study.

Twelfth grade students' greatest knowledge deficiencies were in health areas concerned with nutrition, community health and consumer health. Nutrition ranked lowest in the percentage of correct responses of 12 health content areas. Food and nutrition was one of only five health topics (out of some 30 different topics) emphasized by a majority of all district sizes in every grade from K-12. Weight control was one of the additional topics introduced by a majority of the districts in the 10th grade and continued for emphasis through the two remaining years of high school.

The ninth grade Health Behavior Inventory was subdivided into topics which were intended to measure knowledge, attitudes and practices. While approximately 75 per cent of the nutrition questions were answered correctly, the students scored almost twice as high on questions related to nutrition, health knowledge and attitudes as they did on those concerned with nutrition health practices.

From the School Health Education Studies (SHES), Sliepcevich and co-workers developed a

conceptual approach to health and nutrition education as the means of making the subject matter more effective in the lives of the students. The model developed first a general conceptual definition of health. Three key concepts (growing and developing, interacting and decision-making) which exemplify the *processes* of health and serve to unify the K-12 health curriculum were the second level of the model. The third level consisted of ten concepts which represented the major organizing curriculum elements and reflected the scope of health education. From these concepts the fourth level served to support the ideas of the ten concepts in three dimensions—physical, mental and social. The concepts were indicators of what is to be learned.

Long range goals which reflect what should be expected of the student after experiencing the conceptual approach to health education were also developed for each supporting or subconcept. The goals were stated for three domains: Cognitive or intellectual skills and abilities, affective which stress an emotional tone or feeling or a degree of acceptance and rejection; and action or personal behavior.[24]

This conceptual approach is reported because the same model has been used in developing teaching—learning guides for K-12 in nutrition education for USDA. In fact, the SHES was used as the basis for the guides. Similar nutrition education guides were developed in the state of New York.[29]

Investigators for the Wisconsin study were especially interested in the SHES survey because:

1. The relatively small sampling of large populations produced significant results which were representative of the total population.
2. The methods employed in the survey resulted in an extremely good return of survey forms (from 90 to 96 per cent).
3. Several populations of the public school system were tested, namely, superintendents, teachers and students.
4. Survey results have been well written and reported.
5. New concepts and teaching approaches which will have far reaching effects on nutritional education were developed as a result of the survey.

Hampton and Huenemann *et al.*, reported little relationship between the questionnaire responses of their subjects and their actual eating practices. There was also no correlation between the students' grade point averages and the quality of their diets as measured by the number of nutrients which fell below 2/3 of the RDA. The need for improved, more effective nutrition education was stressed.[12]

Schubert reported on the effect of an effective health and nutrition program developed by the Superintendent of Schools in San Diego, Texas. Average daily attendance in school has increased to more than 95 per cent; school drop-out rates have decreased to less than ten per year; discipline problems are negligible, vandalism doesn't exist and few grade failures due to lack of interest or ill health have been recorded.[23]

The Texas community was included in a ten-state comprehensive health and nutrition survey. No school-aged child had low hemoglobin levels. None were low or deficient in serum Vitamin C and only six per cent were low or deficient in plasma Vitamin A. Their teeth were described as the best examined in the survey of the entire state. The health and nutrition program was designed to carry over to the adult population.[16]

O'Farrell in 1971 reported the results of a survey project developed as a result of the analysis of nutrition education data from a nationwide sampling of opinions from state school food service directors, nutritionists, food service supervisors and home economists. A structured questionnaire was mailed to 851 public school principals, teachers and school food service supervisors. Some 561 (65.2%) completed questionnaires were returned. The sample was systematically, not randomly selected and was not, therefore, necessarily representative of the total state population of these groups. No attempt was made to ascertain from the teachers, actual subject matter content, methods or resource materials and persons used in nutrition education. The questions asked for opinions and attitudes rather than facts.

The need for improved instruction, materials, methods and concepts and teacher preparation was evident from the respondents' comments and expressed opinions. A nutrition education supervisor to coordinate nutrition education with other subjects was deemed feasible only by the food service supervisors.[19]

Food service programs were not considered as an instructional resource for nutrition education. Garvue *et al.*, reasoned that because increasingly larger numbers of community citizens participate in school oriented functions, the school is unequaled as the institution through which every individual could receive the nutritional resources needed to achieve optimum health to which he is entitled. In Florida, less than 15 per cent of the principals and teachers and only 34 per cent of the food service supervisors surveyed considered the school lunch program a learning laboratory for nutrition education.

Lack of parental support for nutrition education was considered more a result of unawareness of the need for their concerned support rather than conscious non-support. The majority of the respondents thought parents should be involved through special

classes and community activities. Survey results indicated that nutrition education should be included at *all* grade levels and that if food service supervisors are to be considered as "resource persons" for nutrition education, they must be recognized as an integral part of the instructional program from the inception of any curriculum development.[19]

Methodology

Public school children comprise a large segment (approximately one million) of the total state population of Wisconsin. Intrinsically involved with the students are teachers, school food service personnel and school administrators—logical, practical population groups from which to obtain data concerning the current status of nutrition education in Wisconsin. Four survey instruments were developed and administered to the four population groups during October and November 1973. The four instruments were designed to facilitate completion without training sessions for the persons involved.

The student's 24-hour food recall forms were designed to assess eating patterns. The investigators of this survey developed an instrument which did not attempt to list all foods which might have been consumed by the respondents. Rather, foods were listed which were considered good or fair sources of particular nutrients; namely, iron, calcium and Vitamins A and C. Proteins and snack foods were included as essential in assessing eating patterns. Data was to be analyzed in terms of the four food groups and the number of students who ate what could be considered a "satisfactory daily pattern" of foods. Only data concerning the number of times food was eaten was considered necessary, thus eliminating the recording and analyzing of amounts of foods consumed. No attempt was made to compare the intake patterns of various foods with recommended daily dietary allowances. These considerations made possible the development of an instrument easy to read and complete in approximately 20 minutes. Detailed written instructions were sent to each building principal of selected schools. The principal was asked to select a responsible adult interested in nutrition to administer the survey. Funds were budgeted to pay for this service. The adult should have good rapport with and understand young children because he or she was required to fill out the survey instruments for the children in K-3. School food service personnel were not involved or notified as to the time and duration of the survey in order to prevent changes or additions to the menus.

Survey forms were pre-coded to eliminate errors which might prevent the forms from being used in tabulating results. For ease in disseminating teacher and student instruments, the names of persons selected were written in pencil on each form. They were informed that the names could be erased before returning them because the optical scanner would pick up only the coded number. Student forms were color coded for each of the three days by ordering the forms printed with different colors of ink—blue for Tuesday, red for Wednesday and brown for Thursday. All survey instruments used the optical scanner for tabulating results on tapes and the computer for analysis of data.

Number two lead pencils were purchased and distributed, returned the first two days and used by the respondents for marking the survey sheets.

The use of a small representative sample of an entire state public school population saved money for printed questionnaires, for tabulation and analysis of data and salaries of personnel to administer the survey. It also simplified the administration of the survey and provided strategies for conducting projects which could be duplicated in other states.

Several aspects of the project were unique in Wisconsin. For the first time a statistical representative random sample of the state's public school children, grades K-12 was used for a three-day, 24-hour food recall study. For the first time representative selected populations of teachers and principals were questioned concerning nutrition education in their schools. All school food service supervisors participated in the study.

The Sample

From the Department of Public Instruction Data Processing Division computer printout lists of all 2,340 public school buildings in Wisconsin were obtained. The lists were organized in columns and ranked according to the distribution of sizes of institutions with students represented in four grade level categories (K-3, 4-6, 7-9 and 10-12). The columns were blocked off in terms of school size (e.g., large, medium and small) as determined by student enrollment. Because of its size, Milwaukee was sampled separately.

Schools were selected in each of the three school size and four grade category blocks by using a table of random numbers. Schools were essentially reordered in likelihood of sampling according to the set of numbers selected. Numbers in the set were chosen without replacement so as to have an exhausted set of numbers between 1 and n. For example, if $n = 15$ and the randomly ordered set of numbers were (9, 4, 2, 1, 12, 10, 3, 8, 7, 14, 5, 6, 11, 13), then the largest school in block A, B. would be selected fourth, whereas the ninth largest would be the first to be selected, etc. The procedure was followed for each of the identified blocks in student selection.

The number of schools to be selected from a given block was based upon the total number of schools within the grade category. A proportionate balance

was retained from each school size block. Each school's inclusion was then a function of its order in the random set, the proportion of schools already included and the relationship between the total number of subjects in that block and the maximum of 275 for any block.

FIGURE 1. STRATIFIED RANDOM SAMPLING OF NUMBER OF STUDENTS.

School Size	K-3	4-6	7-9	10-12
Large	25	18	71	79
Medium	11	8	25	29
Small	4	3	8	11
Milw.	20	14	44	44

Once the total number of schools had been selected for each block, the numbers of students to be tested within each school became a function of the ratio of the school's number of students within the grade category to the total number of students in all schools selected in that grade category, times the maximum sample size for that block. Rosters were requested and received from each selected school and all students were arranged in an alphabetical ordering across grades within the category. A simple random sample of the size already determined was made, again using the table of random numbers. One and one-half times as many students were selected as were actually needed as alternative for the full sample. Thus, if students were absent one or more of the three days, replacements or extra test days would not be necessary to provide needed data. Tables 18 through 22 in the appendix present the sampling data used for the study.

Three hundred and eight schools in 185 districts were selected. Seventeen schools in seven districts (5.4 per cent) of sampled students did not participate in the National School Lunch Program. Only one district refused to participate after the selection process was completed. One unified high school selected district did not participate because class schedules made it impossible to do so within the funding parameters of the project. Eight districts involving nine schools and 156 students did not complete the survey within the time frame of the project and were not included in the results. Four selected schools were closed the year of the project. They included only 15 selected children.

Teachers

The teachers' sample was selected from the same school as were the students. Principals were asked to submit teacher's names for the student selected grades. The names were alphabetically listed and numbered from 1 to n_1. A table of random numbers was used to select the teachers. If a school had less than the number of teachers teaching the respective grade level or courses, all teachers were surveyed. If the number of teachers was at least 2 x n, an additional teacher was selected. In secondary schools, teachers were selected from among the faculty who taught home economics, health and physical education, science and social studies.

Principals

Selection of principals was accomplished by using a computer print-out of school buildings arranged according to students in grades K-6, middle school, junior high school, six-year secondary, four-year secondary and three-year secondary. Each of these groups were numbered from 1 to n_1. A table of random numbers was used to select each building principal until the number in each category had been selected.

Food Service Supervisors

The entire population of School Food Service Managers and Supervisors was included in the survey.

Study Time Schedule

District administrators were notified of the project with a letter dated September 5, 1973. A copy may be found in the appendix. Principals of buildings from which students and teachers were selected received notice at the same time. Principal questionnaires were mailed October 3, 1973. Student and teacher questionnaires with code numbers and names recorded on each were mailed October 29 through November 5, 1973. Food supervisors' questionnaires were mailed November 5, 1973. The student questionnaires were to be administered on a Tuesday, Wednesday and Thursday prior to Thanksgiving week. With very few exceptions this schedule was accomplished and the forms returned to the project director the first week in December.

All questionnaires were submitted for optical scanning and computer analysis prior to the Christmas holidays. Computer print-outs of data analysis were ready for tabulation and interpretation by March, 1974.

Instrumentation

Survey instruments were pre-tested in various schools throughout the state in April and May 1973. School districts which had several schools selected were visited personally by the project director prior to mailing any information or cover letters. The

purpose and requirements of the surveys were explained to the district administrator and his support of the project was solicited and obtained. Without exception, the districts thus visited cooperated fully in the project. When possible, the Wisconsin Division of Health area nutrition consultants made the visits with the project director. In a memo to principals of selected schools the area nutritionist's name and phone number were provided as the local contact person. During the early phases of the project these area nutritionists were most cooperative in answering questions. In some instances, they met with the individuals hired to administer the children's survey to explain their role in the project.

Instructions for administering and returning the instruments for data processing, forms for recording expenses to be billed to the project and cover letters were prepared prior to the beginning of the 1973-74 school year. Schools and principals were selected as described in the sampling procedure.

As soon as schools had completed their new class rosters, superintendents and principals were informed of the proposed survey. (See letters, appendix). Letters were sent to district administrators at least one month prior to the survey in order to obtain school board approval if necessary. A sample letter for parental approval was sent to the principals of the schools selected. They were asked to submit class rosters of the grades from which student respondents would be chosen. The rosters were combined across grade levels by listing children's surnames alphabetically. In large elementary schools there were as many as 17 classes of third grade pupils, etc. The alphabetized lists were numbered from 1 to n, and students selected by using a table of random numbers. The lists of students selected were typed and a copy sent to the school with the student questionnaires. Teachers were selected from the same schools in like manner.

Student and teacher numbers and names and district and school numbers were recorded on each instrument before mailing them to the principals. A form for recording expenses connected with the survey and stamped, addressed envelopes were mailed with the questionnaires. As each set of questionnaires was mailed, the date was recorded on the master list. As returned instruments were processed and checked by the project director the date received was recorded.

Because of the high rate of response on each survey very little follow-up effort was considered necessary. Contacts were made with a few of the principals which resulted in six questionnaires being mailed a second time. Very few problems were noted during the survey period. Some secondary school principals were concerned because even though selected students were granted release time from classes immediately following their lunch period, some students refused to complete the questionnaires the second and third days.

Data Collection and Analysis

As the completed instruments were received, the forms were checked and edited and if necessary held until information which was not completed concerning the respondents age, height and weight and grade was obtained from the school. All instruments were submitted to the university based firm which had contracted to perform the collection and analysis of data. Student labor was used in coding the forms. A graduate student teacher in computer programming tabulated the data through the university computer during generally unused night-time hours.

For each questionnaire a list of information, statistical tests and correlations was prepared for the computer programmer prior to starting the surveys. Only for the student food habit survey were additional or reorganization of date required.

All forms were processed through an optical scanner which recorded responses on tape. Because of the care used by respondents in completing the instruments very few were discarded because of incomplete information. The tapes were then programmed through the computer and print-out data sheets provided to the project director. Analysis of data for the four surveys was accomplished with extensive help from a nutritionist from Health and Social Services, an assistant nutrition professor from the University of Wisconsin and several persons hired to analyze and tabulate the data.

Survey Results

Food Managers and Supervisors

Questionnaires were completed and returned by 969 cook-managers and supervisors, representing 96 per cent of the total population. From this segment of the survey, data was gathered concerning the length of service and preparation for employment, types of menus offered in the school lunch programs, student involvement in the program, and attitudes of managers concerning their role in community education about nutrition.

Length of Service and Preparation for Position

The majority (67.7 per cent) of food service managers and supervisors have worked in the school lunch program for eight or more years (see Table 1). With few exceptions, these people live in the communities where they work.

TABLE 1: NUMBER OF YEARS SCHOOL FOOD SERVICE MANAGERS AND SUPERVISORS HAVE WORKED IN THE LUNCH PROGRAM

Years	Number	Per Cent
0-2 years	63	6.5
3-5 years	124	12.8
6-7 years	119	12.3
8 or more	656	67.7
Other	7	0.7
Totals	969	100

Until the last decade, very few districts had job requirements which involved special education or work skills for food service positions. In 1968, under the direction of Mr. Gordon Gunderson, two staff members in the Food and Nutrition Services in cooperation with staff members of the University of Wisconsin Extension Division, produced three short courses for school food service personnel management development. These courses were taught in several geographical areas of the state in order to make them as convenient as possible for personnel to attend. From 35-40 hours of instructions were provided in each of three levels of management development.

Overall objectives of the courses were—the development of food service managers who should be qualified to:

1. serve nutritionally adequate, attractive, acceptable and moderately priced Type A meals.
2. recognize and promote school food service as an opportunity to provide children with learning experiences in nutrition.
3. demonstrate responsibility for the management of the school food service programs.
4. communicate effectively with students, faculty and parents concerning various aspects of the school food service programs.
5. demonstrate an understanding of trends and problems in school food services.
6. understand and apply basic principles, procedures and precautions necessary to produce quality food in a safe and sanitary manner.

When the short courses were started, some 4,600 persons were employed in food service in public elementary and secondary schools in Wisconsin. The first level short course was planned for all of these food service personnel.

In 1969 the responsibility for teaching this course was presented to the state vocational school program staff. Since 1970, it has been taught as requests made by personnel in the various vocational districts were received within the vocational districts.

The other two short courses were planned for cook-managers and district supervisors. Originally known as the "intermediate" and "advanced" short courses, they contained some course content which was similar to Course I because participants were not required to complete Course I before registering for the other management development courses.

These two courses were taught throughout the state until 1973. The format was changed so that one course need not be taken before the other. All food related management functions were grouped in Course "A" and the other food services management skills were provided for in Course "B". The two courses have been offered each June on three University of Wisconsin campuses: Stout, Stevens Point and Madison since 1973. Four hundred and forty cook-managers and supervisors have taken these two courses. During the 1975-76 school year 437 non-public school lunch program schools were added to the roster of public schools under the supervision of the Food and Nutrition Services. If schools are to effectively meet the challenges presented in nutrition education, better participation in continuing education courses for food service personnel seems necessary.[32]

Other courses of interest to food service personnel are available in Wisconsin. Each year the Wisconsin School Food Service Association conducts a statewide workshop or convention of from two to three

days, during which many classes and training sessions are offered. The University of Wisconsin system has offered courses of interest to food service workers. Approximately 78 school food service managers and supervisors have attended these classes.

Since 1973, supervisory assistance visits of school food service programs within a given geographical area have been followed by a workshop conducted by the state supervisors for the section of Food and Nutrition Services of the Department of Public Instruction. However, these workshops had not been offered in nine areas of the state, including Milwaukee, at the time of this survey.

Table 2 shows the extent of participation in the various preparation courses for school food service personnel and the length of service of participants. A single respondent may have taken more than one course.

TABLE 2: NUMBER AND PER CENT OF PREPARATION COURSES TAKEN BY FOOD SERVICE PERSONNEL COMPARED WITH NUMBER OF YEARS WORKED IN SCHOOL FOOD SERVICE

Preparation Course		Number of Years in School Food Services				
		0-2	3-5	6-7	8 or more	Total
On the job training	N	46	95	93	468	702
	%	6.6	13.5	13.2	66.7	100
Short Course I	N	5	31	41	254	331
	%	1.5	9.4	12.4	76.7	100
Intermediate Short Course	N	2	11	22	160	195
	%	1.0	5.6	11.3	82.1	100
Advanced Shortcourse	N	0	9	9	96	114
	%	0	7.9	7.9	84.2	100
WSFSA Workshops	N	4	24	38	311	377
	%	1.0	6.4	10.1	82.5	100
DPI Workshops	N	3	16	32	205	256
	%	1.2	6.2	12.5	80.1	100
College Course or Workshop	N	5	7	5	61	78
	%	6.4	9.0	6.4	78.2	100
Nutrition Education Course	N	16	31	40	243	330
	%	4.9	9.4	12.1	73.6	100
Other	N	9	7	11	48	75
	%	12.0	9.3	14.7	64.0	100
Total Numbers		90	231	291	1846	2458

No correlation was found between the number of years worked in school food service and whether or not the respondent was a cook-manager or district food supervisor. Approximately 75 per cent of the training and educational courses were taken by managers who have worked eight years or longer in the food service program. However, the length of service indicated total years of food service employment and not the number of years in a supervisory capacity. Districts have customarily promoted from among their own staff. No cook-manager who had worked two years or less had taken the advanced short course and only two had taken the intermediate course. Supervisory personnel have indicated in personal contacts with the project director, that they needed time to become accustomed to their positions before they felt confident enough to take the course. After analyzing data, the investigator concluded that there is a need for more continuing education, enrichment programs, inservice meetings and other means of improving skills and knowledge of school food service personnel which would be available immediately upon their promotion to or being hired in a supervisory capacity.

Of questionnaire respondents, 34.1 per cent reported having taken short Course I; 20.1 per cent, the intermediate short course; 11.8 per cent, the advanced short courses; 38.9 per cent had attended WSFSA workshops and 26.6 per cent, DPI workshops. Of the total respondents, 330 or 34 per cent reported having taken a course in nutrition education. Of this number, 243 or 73.6 per cent had worked eight years or more. Using the chi square test, investigators noted significant correlation between the courses taken in preparation for the managerial position and the number of years worked in school food service. Fourteen home economics teachers were used in various districts to either supervise, prepare or review lunch program menus. None of these teachers had taken any of the training courses.

The director of this study is convinced that in order to make real progress in improving the education and skills of school food service personnel, they should be included in certain school inservice meetings with teachers as part of the total educational team. Additional separate inservice training programs should be planned and provided for food service workers within the district or school as an aid to improving the knowledge, skills, image and educational concepts of such personnel. If food service workers hesitate to leave their geographic area to improve their knowledge and skills, an inservice program seems the most feasible way of meeting their needs for continuing education. Information gathered in this study augments other evidence that new and more effective training and education programs are essential for school food service employees.[17 18 23 27 31 32]

Menu Planning

Persons responsible for planning school lunch menus in Wisconsin public schools include cook-managers, 628 (64.8 per cent); district supervisors, 352 (36.3 per cent); and home economics teachers, 14 (1.4 per cent). This totals 25 more than the 969 total respondents because some individuals made more than one response since in some districts the menus are prepared jointly by the district supervisor and the cook-manager(s). In some districts the home economics teachers review the menus prepared by cook-managers.

No significant correlation was found between the person(s) responsible for menu planning and the number of main dish foods or the number of different vegetables used in menus.

The number of main dish foods and number of different vegetables served during September is shown in Table 3. Some schools served lunch 19 days during the month, whereas others served 15 days, depending on the starting date for the school calendar that year.

TABLE 3: NUMBER OF DIFFERENT MAIN DISH FOODS AND KINDS OF VEGETABLES SERVED DURING SEPTEMBER 1973

Main dish foods	Number of respondents		Kinds of vegetables
0-5	5	3	0-3
6-10	36	54	4-7
11-15	289	263	8-11
16-20	511	354	12-15
20 or more	120	290	16 or more
Totals	961	964	

There was a highly significant correlation between the number of main dish foods included in the menus and the number of different vegetables used. Supervisors or managers who planned larger varieties of main dish foods also planned a greater assortment of vegetables. When this data was compared with that concerning the preparation courses, it was noted that a significant positive correlation existed between attendance at intermediate and advanced short courses and the number of main dish foods and different vegetables.

No significant difference in menu planning was noted among managers, district supervisors, or home economics teachers. Twelve (86 per cent) of the teachers provided 16-20 or more main dish foods during the month, while 64 per cent of the district supervisors and 68 per cent of the cook-managers did so.

Since 1968, supervisors for the section of Food and Nutrition Services have encouraged and taught the use of alternate choice menus. Approximately 12.4 per cent of the managers and supervisors allowed for alternate choice in their menu planning when twenty or more main dish foods were used during the month.

Views About Student Involvement in the Lunch Program

One indication of student acceptance of the menu, food preparation, and portion size servings is the amount of food returned uneaten. Eighty six and one-half per cent of the food personnel respondents indicated that they checked plate return each day. Significant correlations were obtained between checking plate return and attendance at the advanced Short Course and WSFSA workshops.

According to cook manager and district supervisor respondents, students are encouraged by the following persons to taste all foods served: teachers, 48.7 per cent; cooks and servers, 95.4 per cent; principal, 21.5 per cent; administrators, 6.5 per cent; food service supervisor, 35.6 per cent. Respondents said that no one gives this encouragement in 2.3 per cent of the cases. There were no significant correlations between this question and any of the training courses except between WSFSA workshops and cooks and servers.

According to food service managers and school principals, students are involved in the lunch program in several ways. A comparison of responses for managers and principals as to the form of student involvement can be seen in Table 4.

TABLE 4: INVOLVEMENT OF STUDENTS IN THE SCHOOL LUNCH PROGRAM AS SEEN BY COOK MANAGERS AND PRINCIPALS

Student Involvement	Food Service Managers		Principals	
	N	%	N	%
Suggesting menu items	347	35.8	62	11.2
Making posters	191	19.7	86	15.5
Tasting panels	90	9.3	15	2.7
Suggesting policies and procedures	111	11.5	71	12.8
Offering opinions of foods served	484	49.9	126	22.7
Working in the program	470	48.5	194	35.0
Not involved in any way	163	16.8	191	34.5

Food service supervisors have encouraged student participation in decision-making activities on the basis that such involvement is beneficial to both students and the lunch program. Food service personnel can become a more integral part of the educational team through active contact with students during the planning processes.

Another concern of this study was the amount of time allowed for lunch during the school day. Students, cook-managers, and principals were all questioned about the length of the lunch period, and answers are presented in Table 5. Since school principals generally designate the length of the lunch period, it may be expected that they responded accurately to this question. The data indicated some students and cook-managers are unaware of the exact amount of time allowed for lunch.

TABLE 5: LENGTH OF STUDENT LUNCH PERIODS IN WISCONSIN SCHOOLS AS REPORTED BY STUDENTS, COOK MANAGERS AND PRINCIPALS

Lunch Period (in minutes)	Students		Cook Managers		Principals	
	N	%	N	%	N	%
less than 20	74	4.9	29	3.0	6	1.1
twenty	197	13.0	129	13.3	32	5.8
twenty-one to thirty	351	23.2	349	36.0	147	26.5
thirty-one to forty	117	7.7	256	26.4	150	27.1
more than forty	468	30.9	175	17.9	180	32.5

Extremes exist in the amount of time allowed and in the environment in which lunch is served. Where schools allow only twenty minutes, students often do not have sufficient time to select and enjoy their food, and may choose to skip lunch rather than eat under rushed conditions. At the other extreme, students may have as much as an hour for lunch but are confined to the dining area during the entire period, with no provision being made for student activities or games. This practice can also encourage students to avoid the school lunch program.

In some schools it has been observed that students are marched into the lunchroom and seated at tables on both sides of the room. The teacher supervisor blows a whistle to signal that students may line up to receive their lunch trays. Then students return to the tables to eat and must remain seated until a whistle blast signals that they may get up and return trays to the soiled dish windows. Such regimentation is not conducive to a happy lunch period.

Still another example of a poor lunch environment is one in which students are forced to go through the cafeteria line and eat in caps and warm winter coats because they are not allowed to return to lockers after lunch. In this situation students have been observed to be seated at tables so crowded that with their coats on they can scarcely move their arms to eat.

At other schools, principals and administrators have demonstrated genuine interest in the food service and lunch time activities for students. In these cases, many schools have hired aides to supervise lunchrooms and playgrounds, and a few schools have provided games and indoor recreational programs for students during the lunch period. Where 40 minutes or more is allowed for lunch, this can be an excellent opportunity for nutrition education games, activities, and weight control "buzz" sessions. However, food service supervisors and managers have not considered this time period immediately after lunch to be part of their responsibilities and concern.

Items were included on the questionnaire to determine how students, cook-managers, and principals preceived the physical environment of the dining area. Responses concerning the cleanliness, attractiveness, lighting, decoration, and amount of space are recorded in Table 6. Fewer students than adults might consider the area clean because tables are not always washed between groups of diners, especially if time is very limited for the lunch period.

TABLE 6: SCHOOL DINING ENVIRONMENT AS REPORTED BY STUDENTS, FOOD SERVICE MANAGERS AND PRINCIPALS

Dining Area Conditions	Students		Cook Managers		Principals	
	N	%	N	%	N	%
Clean	1131	74.7	945	97.5	528	95.3
Attractive	1068	70.5	839	86.6	457	82.5
Well lighted	1152	76.0	926	95.6	503	90.8
Decorated - posters	713	47.1	617	63.7	288	52.0
Too crowded	317	20.9	116	12.0	105	19.0

TABLE 7: RELATIVE IMPORTANCE OF REASONS FOR HAVING A SCHOOL FOOD SERVICE, BY COOK MANAGERS AND SUPERVISORS (S) AND PRINCIPALS (P)

Reason for Program	Very Important		Moderately Important		Slightly Important		Not Important	
	P	S	P	S	P	S	P	S
	Per Cent							
A convenience for parents	30.5	26.5	31.0	35.9	15.5	19.4	11.7	14.3
A means of meeting at least 1/3 of student's daily dietary needs	47.1	79.6	25.6	14.0	10.1	3.2	5.4	0.9
A learning laboratory for nutrition education	5.6	33.5	22.2	29.4	34.1	20.7	25.6	10.6
A means of providing a meal for children of working mothers	9.7	30.0	35.0	31.8	22.6	22.4	11.0	11.8
To provide free meals for economically deprived children	39.0	70.3	27.4	17.4	18.4	8.4	4.0	1.8
To help children form good food habits	21.8	68.1	35.0	20.4	22.0	6.9	9.7	2.0

Views Compared with Principal's Concerning Lunch Program

Cook-managers, district supervisors, and principals were asked to rate six reasons for having the food service program in their school. Table 7 presents the relative importance given each reason by respondents. The differences in attitudes between the cook-managers and supervisors and principals might be attributable to the impact of workshops and short courses.

One third of the cook-managers and supervisors reported that they considered the lunch program, a learning laboratory for nutrition education as very important. Less than six per cent of the principals gave this response. Slightly more than 1/4 of the principals rated this as a "not important" reason for having a school food service, but only 11 per cent of the food service personnel gave this ranking.

As seen in Table 8, the six reasons for providing a school food service program are ranked according to the percentage of respondents which rated the reason "very important". When the data is approached from this viewpoint, cook-managers and principals agree on the two most important reasons: "A means of meeting at least 1/3 of the students' daily dietary needs" (ranked No. 1) and "To provide free meals for economically deprived children" (ranked No. 2). However, while principals considered "A convenience for parents" to be the third most important reason for the existence of the lunch program, cook-managers rated this at the bottom of the list.

TABLE 8: RANKING OF REASONS FOR HAVING A FOOD SERVICE PROGRAM, BY COOK MANAGERS AND PRINCIPALS (1 = MOST IMPORTANT)

Reason for Program	Rank Order	
	Cook Managers	Principals
A convenience for parents	6	3
A means of meeting at least 1/3 of students' daily dietary needs	1	1
A learning laboratory for nutrition education	4	6
A means of providing a meal for children of working mothers	5	5
To provide free meals for economically deprived children	2	2
To help children form good food habits	3	4

When food service personnel were questioned about their role in providing nutrition education for students, 13.5 per cent indicated that they had no such role. Nineteen per cent reported acting as a resource person for teachers in nutrition education and 83.1 per cent indicated that their role consisted of encouraging students to try new foods.

Questioned about nutrition education programs for parents, 1/5 of the managers indicated that student nutrition problems were discussed with parents at PTA meetings. Only four per cent of the teacher respondents reported this means of parent nutrition communication. Approximately 1/3 of both managers and teachers said that parent-teacher conferences were desirable times for such nutrition discussions. Only 10.5 per cent of the managers and 14 per cent of the teachers noted that materials concerning children's nutrition problems were sent home with the students. The school nurse was considered helpful in discussing child nutrition problems with parents by 20 per cent of the respondents, both food service personnel and teachers.

Forty-one per cent of the food service respondents marked "no comment" when asked whether adults in the community were interested in learning more about nutrition. More than 1/3 (37.5 per cent) agreed that an interest in nutrition was evident in their community, while 13 per cent disagreed with that opinion. Five per cent "strongly agreed" and less than two per cent "strongly disagreed" with the premise.

Respondents were presented with a list of topics and asked to rate them as to importance for parent nutrition education programs. Teachers and food personnel were in strong agreement on only one item: the subject of organic foods. Both groups ranked this at the bottom in terms of importance.

Both food service personnel and teachers were in general agreement concerning the best methods for presenting future parent nutrition education in the community, as both ranked newspaper or magazine articles at the top of the list. Other means of communication which rated high with both groups of respondents were educational television and parent-teacher organizations. Neither group rated special classes for parents or special workshops as especially good means for a nutrition education program.

Principals

Since principals are in large part responsible for the curricula within their supervisory jurisdiction, it was considered important to determine their attitudes and knowledge concerning nutrition education. A random sample of 600 building principals, K-12, was selected and a questionnaire was mailed to each. The response rate for principals was 98 per cent.

Attitudes and Knowledge about Nutrition Education

While 88.6 per cent of the responding principals said that nutrition was taught in their schools, the grade levels and subject areas in which it was included varied widely. More than half of the elementary school principals said that nutrition education was offered in their schools.

Nutrition was most often included as part of elementary science (51.3 per cent) and general health education (47.7 per cent), with home economics listed in third place (34.3 per cent). According to the principals, teachers most often initiated nutrition programs. In the principals' views, however, teachers made very limited use of resource people other than nurses and other teachers. Traditional resource materials, such as books, filmstrips, films and magazines were generally available.

More nutrition education is offered at the K-6 grade level than at higher grades. Nutrition education is offered in 59.9 per cent of the schools at the K-3 level. In 55.8 per cent of the schools nutrition training is offered at grades 4-6. At the junior high or middle school level (7-9 or 5-6), the percentage drops to 28.7. In grades 10-12, nutrition education is available to students in only 21.3 per cent of the schools.

Only 2.2 per cent of the principals reported that nutrition is offered as a separate course with an identifying title. The grade level was not indicated. Another 1.6 per cent said that nutrition was both in separate nutrition courses and integrated in other subject areas; while 58.8 per cent of the 554 respondents indicated that only integrated work was offered in their schools. No answer to this question was given on 207 of the questionnaires.

Of the 223 principals who responded that nutrition education was integrated with other courses, 69.96 per cent indicated that elementary teachers were the most appropriate persons to teach nutrition education. However, 83.56 per cent of these respondents indicated that nutrition education should be offered at every grade level.

Of 218 respondents who reported that principals were responsible for initiating nutrition education in their schools, almost 90 per cent thought it should be taught at every grade level.

In a recent survey of Florida principals and administrators, the author noted that nutrition education would be more acceptable to principals and other education oriented persons if offered to them in the form of a curriculum guide.[19] Since teachers in

Wisconsin are largely responsible for initiating any nutrition education in their own curricula (82.1 per cent of the cases), the most logical and effective way to promote the teaching of nutrition education would be the preparation of a curriculum guide for the subject. Teachers and principals (responsible for initiating nutrition education in 42.6 per cent of the cases) should be involved in the preparation of the guide. A philosophy and vehicle for implementation of nutrition education into existing teacher curriculums without burdening the teacher with additional subject matter must be found. In order to be effective it should utilize the existing educational structure of all districts in the state.

Forty-one per cent of the principals responding to the questionnaire said elementary teachers were the most appropriate persons to teach nutrition education. Specialists such as home economics or health science teachers were named by 17.9 per cent of the principals. Almost 3/5 of the principals said that they would like inservice training about nutrition for their teachers in content, principles, use of teaching aides and methodology. In fact, there was general agreement among the principals that regardless of the nutrition education focus, inservice workshops provide the best means of providing training in nutrition education for teachers.

Another section of the questionnaire for principals concerned the school lunch program and included both factual information and the opinions of the respondents. About 90 per cent of the schools participate in a school lunch program. However, 3/4 of the principals responded that some children in their schools go home for lunch, and 1/3 of the principals said that some children in their schools do not eat lunch. Lunch periods vary from 20 minutes to more than 40 minutes in length, they said, and most permit children to leave the lunch area when they have finished eating.

In the opinion of most principals, the dining area is clean, well-lighted and attractively painted. Principals said that except for eating, students are not often involved in the lunch program in other capacities. When principals rated reasons for having a school lunch program, the use of the school food service as a learning laboratory was rated at the bottom of the list. (See Table 11) The fact that 25.6 per cent of the principals said that the school food program was not important as a learning laboratory for nutrition education (only 5.6 per cent rated it as "important" in this respect) indicates that principals need to be provided with a philosophy of nutrition education which will help them to see the advantages of utilizing the lunchroom as the school's largest classroom.

Opinions about Improving Nutrition Education

Almost all principals agreed that a comprehensive health education curriculum should include nutrition and about nine out of ten thought the Department of Public Instruction should provide a nutrition guide for teachers' use. Table 9 summarizes the opinions of principals concerning the inclusion of nutrition in a comprehensive health education curriculum.

TABLE 9: SUMMARY OF PRINCIPALS' OPINIONS ON INCLUDING NUTRITION IN A COMPREHENSIVE HEALTH EDUCATION CURRICULUM

	Number	Per Cent
Strongly Agree	309	55.8
Agree	222	40.1
No opinion	13	2.3
Disagree	—	0.0
Strongly disagree	1	0.2
No answer	9	1.6

A large majority (96%) of the principals were in agreement that a K-12 comprehensive health education curriculum should include nutrition education. There are no means by which all elementary teachers or secondary health teachers can be required to teach nutrition. Until 1974, the academic program for health teachers did not include a course in nutrition. It would require several years of extensive and intensive effort in workshops and inservice meetings with health teachers to help them see the importance of the nutrition education curriculum guide and to implement it into their curricula before results with the students could be noted in the lunchrooms of the state.

Table 10 presents the opinions of principals concerning whether a nutrition curriculum guide should come from the State Department of Public Instruc-

TABLE 10: SUMMARY OF PRINCIPALS' OPINIONS ON WHETHER OR NOT THE DEPARTMENT OF PUBLIC INSTRUCTION SHOULD PROVIDE A CURRICULUM GUIDE FOR TEACHERS' USE

	Number	Per Cent
Strongly Agree	199	35.9
Agree	272	49.1
No opinion	48	8.7
Disagree	18	3.2
Strongly disagree	9	1.6
No answer	8	1.4

tion. More disagreement about providing the guide than about including nutrition education in the health education curriculum was evident. Some administrators and teachers are protective of district rights to determine what is taught within the schools in their jurisdiction.

Fifty per cent of the principals responding said that all prospective teachers should be required to take a course in nutrition. This is important because the support of principals will aid the implementation of a nutrition education curriculum guide. One-fourth of the principals said they "disagreed" that all prospective teachers should be required to take a course in nutrition, and four per cent said they "strongly disagreed." Two per cent gave no answer to this question and 18.6 per cent said they had no opinion.

Teachers

A representative sample of Wisconsin teachers, grade levels K-12, were asked questions about nutrition education in their school and community and about their backgrounds in nutrition. Questionnaires were sent to 1,100 teachers and 1,025 were completed and returned (93.2 per cent).

Background, Attitudes, Responsibilities in Nutrition Education

A majority of the teachers questioned (all but 65 of a total of 1,025) said they had some educational training in nutrition. About 1/3 reported that they had studied nutrition on their own, while 1/2 said they had learned about nutrition as part of a general course, and about 1/4 of the respondents had had at least one college course in foods and nutrition. About 2/3 of the teachers questioned indicated a willingness to attend future nutrition education courses.

Since the attitudes and practices in teaching nutrition might be influenced by teachers' responsibility in supervising school lunch periods, respondents were questioned about the extent to which they had such responsibility. A total of 243 teachers said that they supervised the school lunchroom every day, with 189 of these reporting compensatory free time for this duty. This supervision seemed to have an effect on the teachers' beliefs about the adequacy of student diets because teachers who supervised the lunchroom every day made higher estimates of the number of students having well-balanced diets than did teachers who did not supervise the school lunchroom.

A higher percentage of teachers who supervised the school lunchroom every day (90.9 per cent) indicated that they believed that lower grades, especially K-3, were the best grades for starting nutrition education.

Reprinted from *The Wisconsin State Journal* courtesy of King Features Syndicate (C)

Among teachers who never supervised the lunchroom, 77.9 per cent believed grades K-3 were the best time for beginning such nutrition education.

Only 6.6 per cent of teachers who supervise the lunchroom every day thought grades 4-6 would be the best time while 4.1 per cent of the teachers who never supervise the lunchroom indicated grades 4-6. By grades 10-12 the response rate for both groups of teachers was .4 per cent and 1.1 per cent respectively.

When teachers were asked to select the most neglected meal of the day, about 95 per cent said breakfast. Teachers who supervised the school lunchroom every day were more apt to judge breakfast as the most neglected meal than were teachers who had no supervisory duty in the lunchroom. This survey's results corresponded with a 1951 Elmo Roper study in which 85 per cent of 1,330 public school teachers said breakfast was the most neglected meal for students.[22]

A great majority of the teachers (893 or 87 per cent) agreed with the statement, "Teaching children nutrition concepts will lead to better eating habits." Forty-eight respondents (4.6 per cent) had no opinion and 62 (6 per cent) said they disagreed with the statement.

Teachers were also questioned about their ideas concerning preferred methods and specific subjects covered in nutrition units currently being taught in Wisconsin. About 53 per cent of the teachers said they taught nutrition units using curricula developed largely by themselves.

A relatively small amount of time during the school year was devoted to nutrition education in any of the grades. For example, at the lower grades, more than 75 per cent of the teachers devoted less than 11 hours a year to teaching nutrition. At the secondary levels (which included home economics teachers), only about 1/3 of the respondents reported spending more than 11 hours teaching nutrition.

There was a correlation between the nutrition education background of the teacher and whether or not the teacher taught a nutrition unit in his or her classes. For example, of the teachers who had never studied nutrition, 17.8 per cent were teaching a nutrition unit, while 82.2 per cent were not. Among teachers who had attended a nutrition workshop, 80 per cent were teaching nutrition. Such workshop attendance was to be the most common nutrition education background, although 69.9 per cent who taught nutrition had attended a regular college course in food or nutrition.

Teachers (61 per cent) said they had more responsibility for initiating nutrition education than any other person at all grade levels. For this reason, development of nutrition curriculum should involve teachers during all stages of preparation. Others who were less apt to assume responsiblity for initiation of nutrition education were school principals, board of education members, and district administrators. Teachers reported that parents initiated nutrition education in schools very infrequently.

Nutrition was usually integrated with other courses rather than being offered as a separate identifiable course. Only 36 (3.6 per cent) teachers reported nutrition being taught as a separate course. This is seen as a good trend because more students can be reached in this manner. The choice of integration with other subjects was made by local school personnel since there was no state nutrition education guide in use at the time of the survey.

Teachers in the survey were presented with a list of topics which might be included in nutrition classes and were asked to indicate those which they emphasized in their nutrition units. As presented in Table 11, many of the topics named are quite varied and can be easily integrated with other subject matter, such as biology or social studies. The fact that respondents indicated that some important topics, such as "Results of Overeating," "Weight Reduction Diets," and "Problems of Hunger in the World," receive little attention in nutrition units points up the need to involve individuals who are up-to-date in their nutrition expertise in formation of curricula. It is important that the prevalent nutritional problems in our society be addressed more adequately than is presently the case.

TABLE 11: NUMBERS OF TEACHERS EMPHASIZING SELECTED BIOLOGICAL OR SOCIAL TOPICS IN NUTRITION UNIT

	Number of Teachers
Eating Well Balanced Diet	539
Importance of Good Breakfast	468
Positive Results of Good Nutrition (Strong Bones, Good Complexion, General Well Being)	449
Individual Food Habits	384
Which Foods are Sources of Nutrients (Protein, Minerals, etc.)	357
Source of Food	331
How Food is Digested	239
Results of Deficiencies of Nutrients (such as rickets)	209
Function of Nutrients	204
How Food Nourishes Cells	159
Problems of Hunger in the World	144
Results of Overeating (obesity)	134
Weight Reduction Diets	121
Culture Food Patterns	115
Importance of Food in History	62
Other	21

The greatest number of resource persons used by elementary teachers in teaching nutrition units were school nurses, followed closely by home economics teachers in the secondary schools. Other teachers in school as well as school lunch supervisors are being called upon to act as resource persons in nutrition education. Very few teachers indicated that they look to hospital dietitians, public health nutritionists, university nutritionists, or county extension home economists as resource people. Of course, not all schools are located in areas where these potential resource people are readily available.

Development of nutrition concepts will be much more successful if actual foods can be used in teaching. However, many teachers, particularly those in elementary schools, reported that food was not available for use in the actual classroom teaching about nutrition. This is a deficiency which School Food Service personnel should be able to remedy. The relative lack of availability of resource materials

at the lower grade levels is a major reason why nutrition is not given much emphasis in elementary schools.

TABLE 12: TEACHERS' OPINIONS ABOUT QUALITY OF NUTRITION TEXTBOOKS OR REFERENCES, BY GRADE LEVEL

Opinions about Textbooks	Grade Level			
	K-3	4-6	7-9	10-12
	Per Cent			
Not Enough Material on Nutrition	43.1	51.6	42.5	43.4
Material Too Advanced for Grade Level	20.8	11.3	12.5	14.5
Material Too Simple for Grade Level	0.9	5.2	2.5	2.7
Material Out of Date	9.7	30.9	20.0	34.2
Material Not Interesting	12.9	39.2	40.0	40.8
No Problems	16.2	11.3	17.5	10.7

As may be noted in Table 12, the majority of teachers at all grade levels reported problems concerning the quality of nutrition textbooks or reference materials. Most teachers said there was simply not enough material on nutrition available at their schools, and over twenty per cent of the K-3 teachers felt that the material they had was too advanced for the grade level. Less than one per cent of the teachers at K-3 believed the nutrition-related material to be too simple for the grade level. At grades 7-12, a common complaint (40 per cent of the teachers so responded) was that the material was simply not interesting.

Opinions about Improving Nutrition Education

Teachers were asked to indicate which of 23 specific teaching methods they had used and which they found to be most successful. Ironically, some of the more commonly used methods were rarely rated "most successful." For example, lectures and discussion of how much of various foods are needed for growth and health are commonly used, but few teachers rated them "most successful." On the other hand, certain methods considered "most successful" are rarely used. Into this category would go field trips to show how foods are produced and/or marketed in the community and tasting new and unfamiliar foods. The School Food Service worker is a potential resource for both of these learning activities. Plans have been made by the staff of the Wisconsin Food and Nutrition Service of the Department of Public Instruction and the University of Wisconsin to involve school food supervisors in short courses designed to improve their knowledge of nutrition and to increase their participation as resource persons for nutrition education in the schools. Table 13 presents data on methods chosen "most successful" by teachers of different grade levels. These results have many implications for development of nutritional learning materials.

In order to change childrens' food habits, parents must be educated to help children eat nutritious foods at home. Teachers can be an important bridge between the child who needs nutritional help and the parent. However, 434 (42 per cent) teachers said they did not discuss nutrition problems with parents. Parent-teacher conferences provided 347 (33 per cent) teachers in the survey with a chance to talk about students' nutritional needs. The school nurse was enlisted to help in this area in 300 (21 per cent) cases, while seven teachers said they sent material home with students. Only 41 (4 per cent) teachers indicated that PTA meetings were used for discussions about nutrition education.

When teachers were asked their opinions as to methods of reaching and improving parents' nutrition knowledge and practices, more than half (530 or 51 per cent) indicated mass media, especially articles in newspapers or magzines, as being an important tool. Parent-teacher organizations were named by 403 (39 per cent) teachers, and 380 (37 per cent) said educational television would be the best vehicle for accomplishing this goal. Special classes for parents were named by 370 (36 per cent) teachers, while 267 (26 per cent) said the University or the Department of Public Instruction should present special workshops for parents. One third of the respondent teachers indicated that adults in the community were interested in learning more about nutrition. Of 984 teachers who responded to the statement, "Do you agree or disagree that adults in your community are interested in learning more about nutrition?" Thirty three per cent agreed or strongly agreed, 46 per cent had no opinion, and 21 per cent disagreed or strongly disagreed.

Teachers in the survey were asked which of a series of selected topics would be best to cover in parent nutrition education programs. Teachers could check more than one topic. Topics ranked in the following order: "Food Needs at Different Ages," "How Food Affects Physical Development;" "Advantages of Eat-

TABLE 13: TEACHERS BY GRADE LEVELS INDICATING "MOST SUCCESSFUL" LEARNING ACTIVITIES

Learning Activities	TEACHERS ACCORDING TO GRADE LEVELS TAUGHT			
	K-3	4-6	7-9	10-12
	Per Cent			
Tasting new and unfamiliar foods	26.2	8.7	17.4	25.3
Learning to identify new foods	8.3	5.2	8.7	11.6
Using food models	10.3	3.5	0.0	4.2
Encouraging children to taste all food served at school lunch	29.4	7.8	6.5	2.1
Planning menus for school lunch	2.4	5.2	8.7	4.2
Having children check if they are eating enough of a particular food	18.7	20.9	34.8	16.8
Having children develop plan for improving food practices	5.2	10.4	15.2	10.5
Keeping and/or revising records of food eaten in one day	20.2	26.9	39.1	28.4
Conducting small animal feeding demonstrations	1.2	2.6	0.0	4.2
Classification of foods according to four food groups	32.5	33.0	50.0	26.3
Planting vegetable seeds and watching them grow	27.4	17.4	4.4	1.1
Discussing how much of various foods are needed for growth and health	11.9	15.7	17.4	14.7
Evaluation progress in improving children's food practices	5.2	5.2	2.2	2.1
Making surveys of food wasted by grade groups at school lunch	1.2	1.7	0.0	2.1
Surveying food habits of members of class and their families	4.4	5.2	8.7	5.3
Comparing costs of different kinds of foods	1.6	8.7	13.0	30.5
Going on field trips to show how foods are produced and/or marketed in community	15.1	6.1	4.4	11.6
Studying food habits of people from other parts of the U.S. and/or World	1.9	7.8	10.9	9.5
Using resource people to come and tell about food	1.6	3.5	0.0	1.1
Lectures	1.2	1.7	2.2	9.5
Discussions	25.4	18.3	36.9	26.3
Using films or filmstrips	45.2	33.0	39.1	29.5
Discussion weight and height measurement of children in class	12.7	8.7	17.4	14.7

(Totals do *not* add up to 100% because some teachers rated more than one method "most successful")

ing a Good Breakfast," "Selection of Snack Foods," "Food Choices of School Age Children," "Special Diets and Weight Control," "Advantages of Eating a Good Lunch," "School Food Service Contribution to Nutrition," and "Organic Foods." The latter two subject areas trailed far behind others in the list.

Of the responding teachers, 70 per cent ranked "Food Needs at Different Ages" above all other suggested topics to be presented in parent nutrition education programs. Less than 18 per cent of the teachers at all grade levels indicated that discussion presentations of how much various foods are needed for growth and health was their "most successful" learning activity: (See Table 13). Perhaps the teachers felt the need for parental cooperation and help in order for student activities to be effectively handled by other than lecture or discussion. Possibly, per-

tinent data and suggested student activities have not been provided teachers for this topic. Or, because they did not know how to successfully teach the topic, it should, therefore, be delegated to parental nutrition education.

Based on the results of the teachers' portion of this survey, as well as on the other research in the area, the project director can make several recommendations. Among these are that prominent identification of materials and resource persons in the nutrition field should be available to all teachers. Materials must be kept current. Since school programs are already crowded with many subjects, rather than add another one, it is important to integrate nutrition education with existing disciplines. Expert assistance in nutrition content is needed, but educators, too, must be involved in the process of curriculum formation. Teaching nutrition in many disciplines will also insure greater student contact.

Recognition of nutrition problems and evaluation of nutrition education as a means of solving them should continually be monitored. This requires cooperation with outside agencies such as the Dividion of Health and Social Services and the universities. Nutrition education programs involving the community also require close cooperation among educators and community resource persons.

Teachers' preparation in basic nutrition principles is frequently weak. But, it is impractical to expect that substantial nutrition background in the form of college courses can be provided to teachers already in the field. Expansion of pre-service nutrition offerings for teachers should be explored and such is already being accomplished at some universities. To help remedy the lack of background in basic nutrition among teachers, it is proposed that video tapes and other portable materials be prepared for use in inservice offerings throughout the state. This effort should be merchandized to different groups, including professional education unions, administrators, and school board members.

Student Food Habit Survey

A stratified random sample of 6,000 students was selected to represent the Wisconsin public school population of approximately one million children. The survey was conducted in November and December 1973. A total of 4,636 students completed survey forms for all three days. Rather than cut the sample to only these students, the responses of each day were totaled and divided by three to obtain daily averages noted throughout the report. For example, 4,983 respondents completed the forms on Tuesday, 4,994 filed out the forms on Wednesday and 4,917 participated on Thursday. The average for the three days was 4,965 rather than the 4,636 who completed all three days. The procedure was to tabulate the food group data by sex and grade level, then all grades by sex and finally, all students. Percentages were figured for each of the numbered responses by food groups, not as percentage of total average respondents.

Only selected data is reported. None of the data is statistically representative of any single grade, school or district with the exception of Milwaukee. Data from Milwaukee students is included with all other students in this report.

The objectives for this particular survey were:

1. To determine if the instrument developed could be administered to large population groups without expensive, time-consuming training sessions for persons responsible for supervising participants.
2. To appraise the instrument's reliability to adequately portray respondent's eating patterns.
3. To identify nutritionally vulnerable areas among school children for which nutrition education activities should receive priority.
4. Identify the contribution of the following food groups to the total student food intake in a 24, 48, and 72–hour period: milk and milk products; cereals and bread; meat and meat alternates, and Vitamins A and C.
5. Identify the students' general pattern of eating during the 24, 48 and 72 hour periods as measured by these food groups.
6. Identify the kinds and number of servings of food which contribute calcium, iron, and Vitamins A and C to the child's nutritional health.
7. Obtain an indication of the influence of high carbohydrates and/or empty calorie foods on total food intake.
8. Identify the number of children over and under the median and mean weight range curve established by the median or mean of each total grade group sampled.
9. Identify the number of children taking vitamin supplements; determine the significance of fortification and enrichment of foods.
10. Identify the number of children eating breakfast; what foods were eaten and reasons for not eating.
11. Identify the number of children eating school lunch; foods eaten for lunch and reasons for not eating lunch.
12. Determine whether children who eat breakfast consume more foods which are good sources of

calcium, iron and Vitamins A and C than those children who do not eat breakfast.

The type "A" lunch pattern is often compared with the four food groups in courses for school food service personnel. Most student and community populations are also familiar with the four food groups. Because of general familiarity, this particular grouping of foods was considered the logical reference for reporting survey data to communities and schools. Foods not eaten the recommended number of times in the four food groups can be identified. Other studies have indicated that Vitamins A and C, and the minerals calcium and iron are the nutrients most often short in children's daily food intake.

Dr. Philip L. White of the American Medical Association developed a practical nutrient determination for personal dietaries, recorded for three days. The number of servings of food eaten in each category was to be recorded. Estimate of portion sizes was required. One serving of meat was considered to be three ounces of cooked meat. A six ounce cooked steak would be recorded as two servings.[7] Children or adults not familiar with food weights and measures would not be able to estimate the amounts of foods eaten with any degree of accuracy. Accurate evaluation of the nutrient content of food intake becomes difficult if not impossible. Trulson *et al.*,[28] reported that investigators often had to assume portion size, a procedure of questionable accuracy.

The questionnaire developed for this survey required only a "yes" or "no" response for eating specific foods. No attempt was made to determine the amount of each food consumed. Food lists included in the survey were designed to cover the following six specific groups of foods: (1) milk foods, (2) meat and alternate foods, (3) foods considered good and fair sources of Vitamin A, (4) foods considered good and fair sources of Vitamin C, (5) breads and cereals, and (6) all foods in the previous five food groups plus additional specific foods containing iron. See the questionnaire (p. 63, 64, appendix) for the foods considered good or fair sources of these nutrients.

The instrument developed for the food habit survey was administered with minimum problems and without training sessions for administering adults. However, when the data was tabulated, the investigators noted that some respondents failed to record specific foods consumed with their meals. For example, if a hamburger was eaten for lunch, the meat was recorded more often than was the bun. At breakfast, jelly and jam was recorded more often than was toast or breads. Even though the survey was completed immediately after lunch, some students failed to record the milk consumed with their lunch.

The problem of failing to record some foods eaten might have been corrected if the investigators had suggested that the students write down what they actually ate each period on a separate form. They could than complete the questionnaire by transferring the foods to the appropriate columns. With the bread and cereal and milk groups, the investigators could have had the students record the number of slices of bread, number of buns or glasses or half-pints of milk. One reason for concern was that fortified cereals and breads are an important source of iron, one of the nutrients considered important to the study.

Secondary level students did not record as many "yes" responses in any of the food groups the second day, and even fewer "yes" responses the third day of the survey than did students grade 4-6 who also completed their own questionnaires. The higher number of "yes" responses from the younger children (K-3) may have been partially due to the influence of the adult who administered and completed the questionnaire on a one-to-one basis. Students (4-6) seemed to take the survey more seriously than the older students. Perhaps a one-day 24-hour food recall survey would provide data as reliable as the three-day. The responses of the participating students were more complete the first day. The shorter period would greatly simplify the obtaining and evaluation of data.

Food Intake Patterns for Six Specific Nutrients

Foods included in the milk groups were cheeses, milk drinks, custards, puddings and ice cream. The study shows that students in Wisconsin reported similar "yes" responses for drinking milk and eating milk foods as students in studies which have been conducted in other states.

Trulson *et al.*,[28] reported 16 per cent of the tenth grade boys and 23 per cent of the tenth grade girls surveyed consumed less than 1/2 pint of milk a day during a three-day dietary survey. Edwards reported no milk intake by fourteen per cent of the students. Only 66 per cent consumed two or more cups of milk or milk products.[8] Callahan[4, 5] indicated that nearly 300,000 children in Massachusetts did not consume recommended amounts of milk and milk products.

The number and percentages of students who ate foods from the milk group during the survey period can be seen in Table 14. The milk food intake difference between boys and girls was not statistically significant.

The number of students recording "yes" responses to foods in the milk group decreased from elementary to secondary grade level. For example, 29 per cent of the boys and 34 per cent of the girls in grades K-3

TABLE 14: STUDENTS WHO ATE FOODS FROM THE MILK GROUP AT REGULAR MEALS AND SNACKS

(a) By Grade Level and Sex

	Milk		Custards, Puddings		Ice Cream		Cheese	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
				Per Cent				
K-3	28.6	34.1	23.2	22.6	20.9	24.4	18.1	16.0
4-6	24.6	26.0	30.5	39.4	27.2	31.0	27.8	31.7
7-9	23.4	20.1	25.5	24.2	28.9	24.8	25.5	25.3
10-12	23.4	19.8	21.1	13.7	23.1	19.9	28.6	27.0
Totals	100	100	100	100	100	100	100	100

(b) By All Grade Levels and Sex

Milk		Custards, Puddings		Ice Cream		Cheese	
Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
			Per Cent				
47.2	46.0	7.9	7.4	32.0	30.1	12.8	16.4

(c) By All Grade Levels

Milk	Custards, Puddings	Ice Cream	Cheese
	Per Cent		
47.0	7.7	31.1	14.5

(d) By Sex

	Boys	Girls
Per Cent	80.9	71.5

recorded "yes" responses for milk beverages, but in grades 10-12, only 23 per cent of the boys and 20 per cent of the girls reported drinking milk. When all milk foods were grouped together, 77 per cent of the boys and 71 per cent of the girls recorded "yes" responses. Conversely, from 23 to 29 per cent of all public school children in Wisconsin did not report consuming any milk foods during the three days of the survey.

Ranked in order according to the number of "yes" responses recorded, foods in the meat and meat alternate food group were as follows: nuts (27.33 per cent); peanut butter (25.18); luncheon meats and wieners (13.43); stews (10.02); pork, beef, veal, liver, lamb (7.32); poultry (6.54); eggs (4.43); fish (3.10); dried peas and beans (2.65).

The relatively low ranking for beef, pork, veal, liver, and lamb was somewhat surprising to investigators since ground beef is prevalent on most school lunch menus. The fact that students may not have related hamburger with beef might account for the small percentage of "yes" response in this category. Friday was not one of the survey days, thus contributing to the low ranking of fish in this food group.

Boys reported "yes" responses for meats and meat alternates more often than did girls at all grade levels. Boys in the 4-6 grade level reported eating meat and meat alternates the largest number of times. During the three-day survey period, an average of only 68.85 per cent of the boys and 53.3 per cent of the girls recorded eating meats and meat alternate foods. From 10 to 15 per cent of Wisconsin school children reported "no" responses to eating meats and meat alternates at least twice a day.

In the breads and cereal category of food, only 36.88 per cent of the boys and 25.96 per cent of all girls recorded "yes" responses. Within this food group, boys recorded more "yes" responses than girls; however, slightly more girls than boys recorded "yes" responses to eating bread (63 per cent girls, 58 per cent boys).

As in the meat category, students in grades 4-6 recorded more "yes" responses to cereals than did older students, but secondary school students recorded more "yes" responses to breads than did elementary students.

Investigators are of the opinion that students did not recall accurately the frequency with which they ate bread. For example, a daily average of 637 students reported eating jam or jelly at breakfast, but an average of only 189 recorded eating any sort of bread at this meal.

The average daily "yes" responses for the bread and cereal category are tabulated in Figure 2.

Figure 2: AVERAGE OF 3 DAYS RESPONSES – FOODS IN BREAD AND CEREAL GROUP

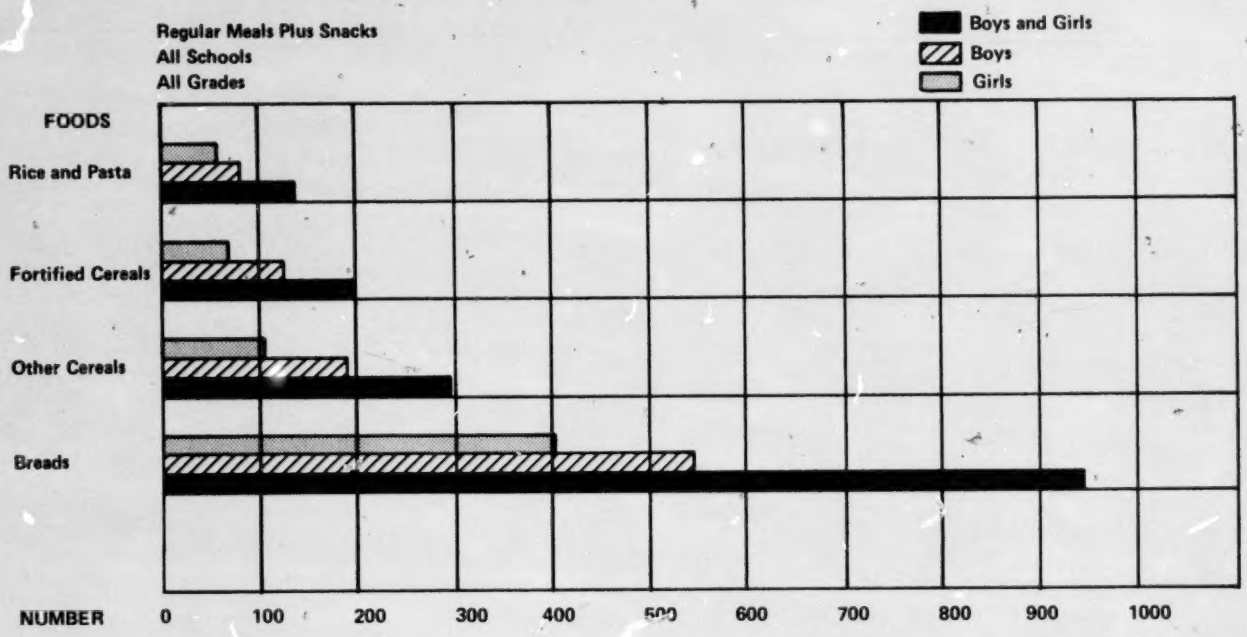
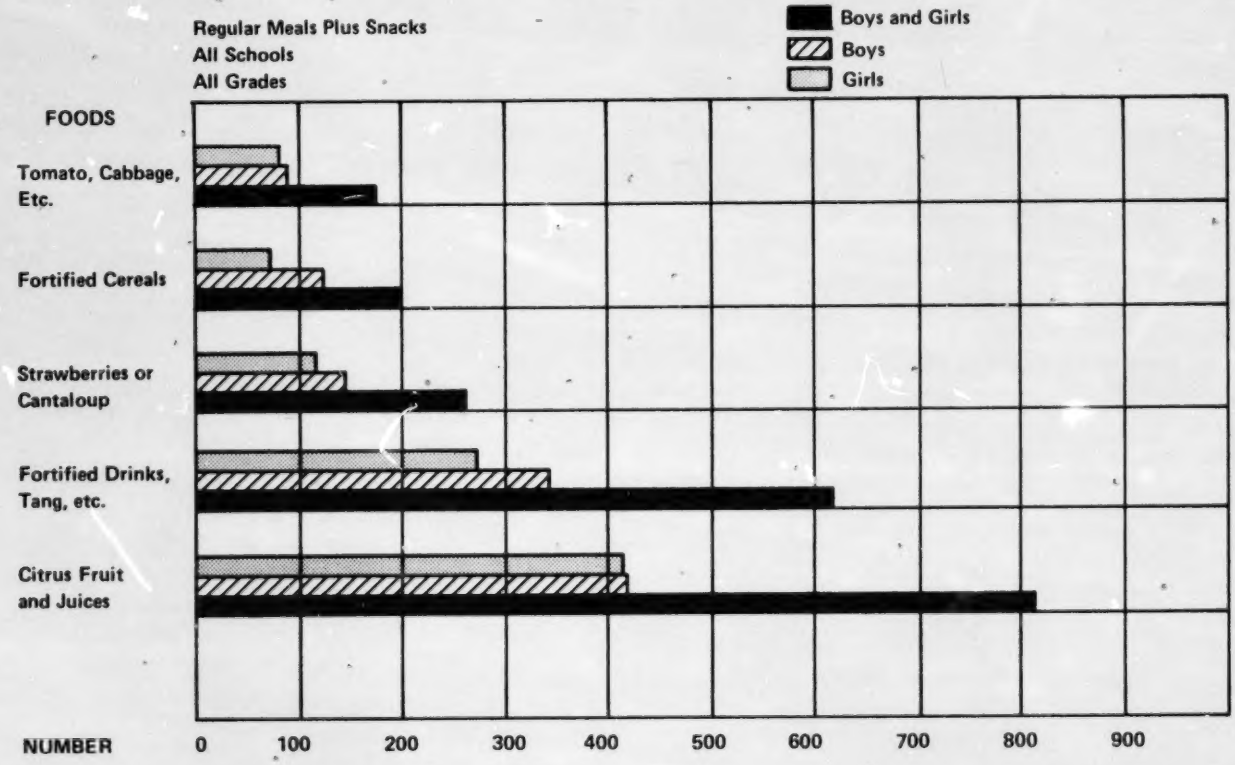


Figure 3: AVERAGE OF 3 DAYS RESPONSES – FOODS IN VITAMIN C GROUP



Survey results concerning Vitamin C foods show that diets of Wisconsin students are more adequate in this nutrient than were diets reported by some investigators in other states. Edwards *et al.*,[8] reported data which indicated that 59 per cent of the students in their study ate no vegetables or fruits rich in Vitamin C on the day of the survey. Adelson[1] reported that approximately 30 per cent of the diets in the North Central region had less than 2/3 of the R.D.A. for Vitamin C. Dobbins[6] noted that approximately 8.6 per cent of the students consumed less than 1/3 of the R.D.A. for ascorbic acid. However, this data which indicates that more than 25 per cent (25.14 for boys and 27.34 for girls) of Wisconsin school children are not receiving adequate intakes of Vitamin C points to the need for more nutrition education and better eating patterns for all public school students.

For students reporting consumption of Vitamin C foods, citrus fruits and juices were most common sources (39.8 per cent). Tang and other fortified fruit drinks accounted for 29.6 per cent, with strawberries and cantaloups (12.6 per cent), fortified cereals (9.6) and tomatoes, cabbage, etc. (8.4) accounting for the remainder.

Except for grades 7-9, girls recorded more "yes" responses to drinking and eating citrus fruits and juices than did boys (43.08 per cent for girls and 37.02 per cent for boys). Girls in grades K-6 also ate more fortified cereals than did boys. Results in Vitamin C fortified cereals were reversed on the secondary level, however, as more "yes" responses were recorded for boys than for girls. Again, grades 4-6 students reported more "yes" responses to Vitamin C foods than any other grade level.

The daily average in the Vitamin C food group is illustrated in Figure 3.

A total average of only 30.61 per cent of the students (33.28 for boys and 27.95 for girls) reported eating any of the fruits and vegetables on the Vitamin A check list. When generalized to the entire school population, survey figures indicate that approximately 320,000 Wisconsin K-12 students did not eat foods considered fair to good sources of Vitamin A during the three survey days.

As illustrated in Figure 4, dried fruit was the most popular food in this category, followed closely by peaches and melon. Carrots, a common item in school lunch menus, was the third most commonly eaten food in this category.

The comparison of boys and girls for the Vitamin A food group is also shown in Figure 4. In every instance, boys reported eating Vitamin A foods more often than did girls.

Again, students in grades 4-6 reported more "yes" responses to the fruits and vegetables in this food group (43.09 per cent) than any other grade level. Senior high students reported eating these foods less often than did any other group of respondents. When compared with a Massachusetts study,[4,5] this survey indicates that Wisconsin students in grades K-6 reported eating more Vitamin A foods, but Wisconsin students in grades 7-12 ate less from this food group than did their Massachusetts counterparts.

In a 1965 nationwide survey of household food consumption, Adelson[1] reported that 25 per cent of the diets in the North Central region had less than 2/3 of the recommended daily amount of Vitamin A. Lund and Burk [14] noted that Vitamin A intake was associated primarily with the mother's attitude towards particular fruits and vegetables considered high sources of Vitamin A.

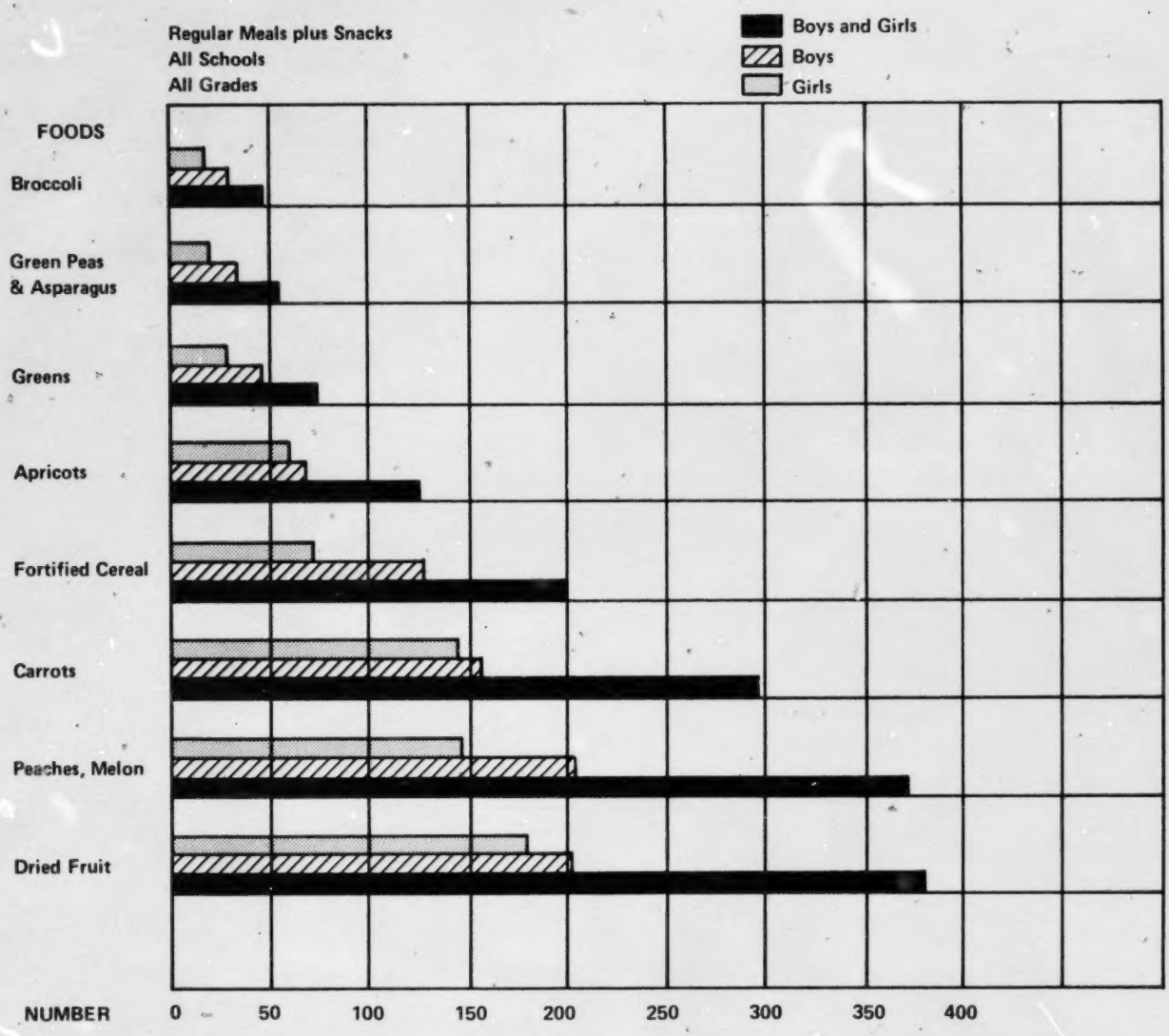
Daily consumption of Vitamin A is not considered as essential as daily ingestion of Vitamin C because the body can store significant quantities of Vitamin A in the liver. However, a constant supply of Vitamin A is necessary for the formation of rhodopsin to prevent night blindness or permanent visual impairment. Vitamin A also contributes to proper growth and development of bones.[25] The Food and Nutrition Service of the USDA has recommended that Vitamin A rich foods be included in Type A lunch menus several times each week.

To encourage consumption of Vitamin A rich foods, in recent years the USDA purchased purple plums, apricots, yams, and other such foods for the school lunch program. Results of the current study indicated that nearly 70 per cent of the Wisconsin children are not eating these foods. Because these fruits and vegetables are not native to the state, they may be unfamiliar to children and may not be generally purchased for home-prepared meals. This is another area where survey results indicated a need for nutrition education for both parents and students in the state of Wisconsin.

Iron has received more attention in the advertising media than any other nutrient; yet, this study indicated that iron deficiency may still exist among Wisconsin school children. While children absorb iron more efficiently than do adults, they need more iron because of their active growth rate.[25] To gauge the iron intake of students, investigators in this study listed sixteen different iron source foods on the questionnaire. A satisfactory daily pattern for iron was based on four "yes" responses for iron rich foods for boys and girls aged 5 to 11 and eight "yes" responses for students 11 to 18.

During the 3-day test period, 42 children reported

Figure 4: AVERAGE OF 3 DAYS RESPONSES – FOODS IN VITAMIN A GROUP



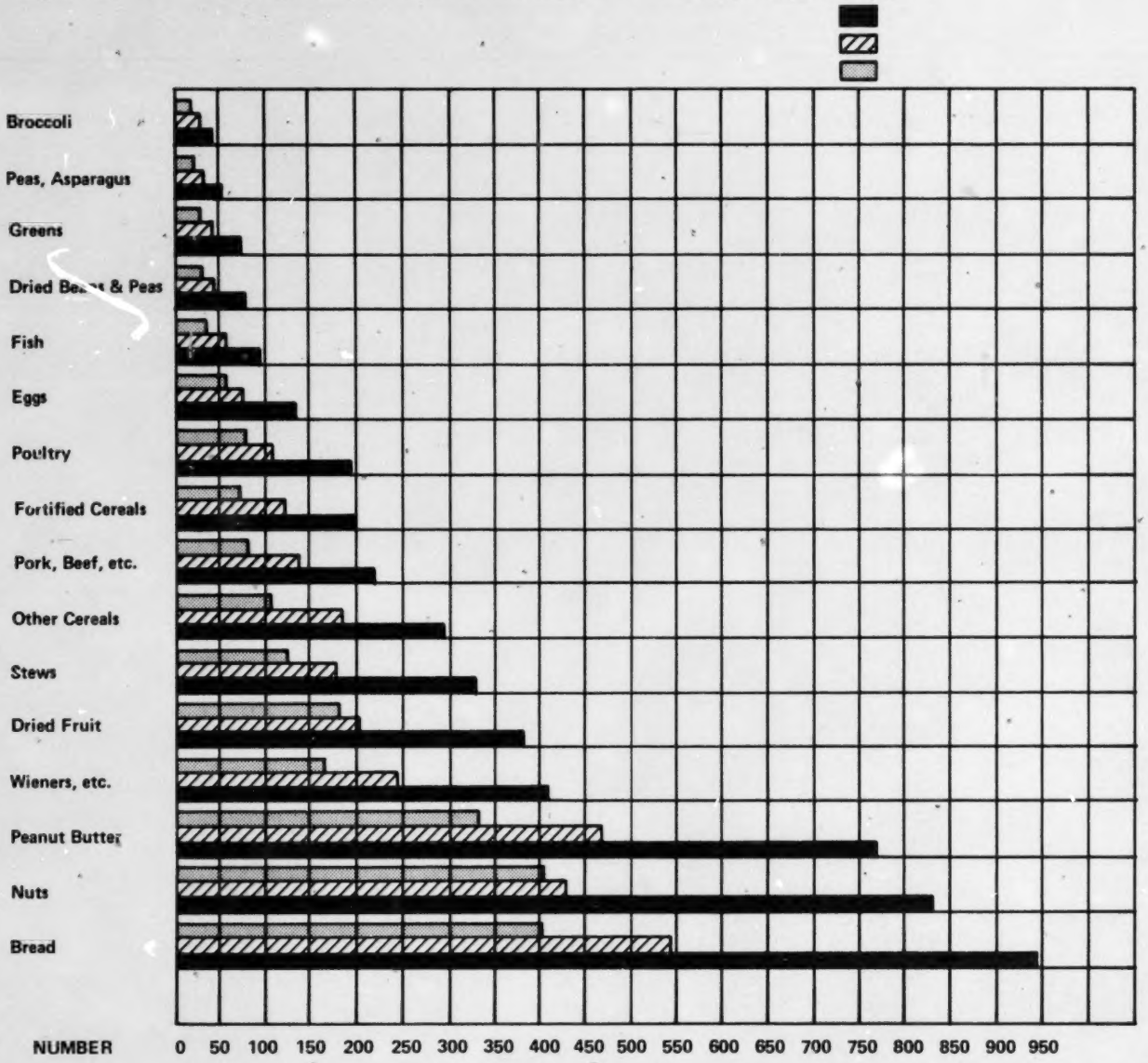
no "yes" responses to the iron group foods, and an additional 1,773 (35.58 per cent) recorded eating less than four different foods within the sixteen. Only 57.5 per cent of the students consumed sufficient numbers of these foods to consider the eating pattern of iron rich foods to be satisfactory.

Figure 5 shows the responses by number and sex of students to the iron group foods. Fortified breads topped the list, with nuts and peanut butter close behind. Again, the low ranking for fish might be because Friday was not a survey day.

When iron intake was analyzed according to grade level, data indicated that consumption of iron foods decreased as grade level increased. While more than 80 per cent of both boys and girls at the K-3 level recorded "yes" responses in this category, grade level 10-12 boys recorded only 43.9 per cent "yes" responses and girls reported 25.9 per cent. Girls in junior and senior high need more iron than do younger girls, but the older group of girls had the lowest response rate in this important nutrient.

Dr. Nancy E. Johnson, associate professor of nutritional science with the University of Wisconsin Madison, developed a "Nutrient Adequacy Reporting System" (NARS) which has some similarities with the instrument used in this study. Amounts of foods eaten are obtained over a 24-hour period. Respondents may take the forms home with them to record meals and snacks eaten during the period. Amounts of all foods consumed are estimated. Tabu-

Figure 5: AVERAGE OF 3 DAYS RESPONSES – FOODS CONTAINING IRON



lations are computer programmed for immediate analysis of results. Nutritive values for 11 specific nutrients are obtained and information provided to the participants.[13]

Approximately 900 children in Milwaukee were tested with NARS within a year of this survey. A comparison with the survey of 539 Milwaukee students in this study indicated that the results obtained were very similar to the NARS for protein, calcium, iron, Vitamin A and Vitamin C.

Investigators believe that school food service managers and supervisors should make special efforts to add iron-rich foods to their menus, prepare them well and serve them attractively. Probably more emphasis should be made in newsletters and recipes sent to schools to help alleviate the shortage of this nutrient in diets of school children.

Satisfactory Daily Eating Patterns

When the questionnaire was developed, the following satisfactory daily patterns for various food groups was established. Generally, these follow the suggested number of servings for the Basic Four food groups:

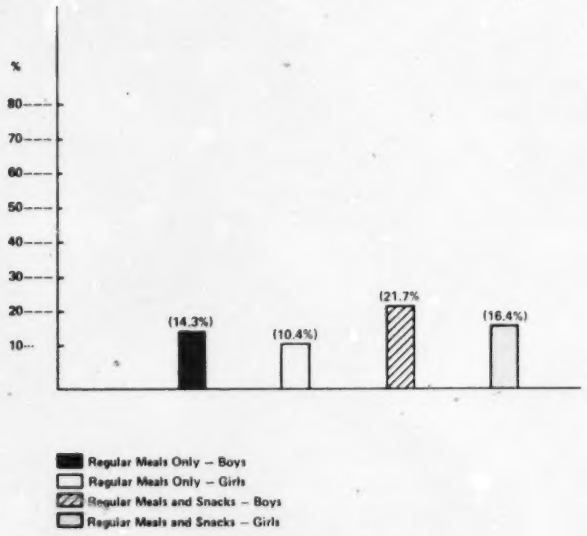
1. Each day, if a student marked "yes" three or more times or for three or more foods in the

milk group, it would be considered a satisfactory pattern.

2. If a student reported eating a meat or meat alternate food twice or two different meat or meat alternate foods each day, the pattern would be considered satisfactory.
3. If a student consumed bread or cereal foods three times or marked three foods once in this food group each day, it would indicate a satisfactory pattern.
4. If a student ate one food each day which was considered a good source of Vitamin C or two foods which were judged to be fair sources of Vitamin C, the eating pattern would be rated satisfactory.
5. One "yes" response for foods rated good sources of Vitamin A would be sufficient each day for a satisfactory daily pattern.
6. Four "yes" responses each day for iron rich foods for boys and girls aged 5 to 11 and eight "yes" responses for students 11 to 18 years old would rate a satisfactory daily pattern for iron.

Data for students with a satisfactory daily pattern for all food groups are shown in Figure 6.

Figure 6: PER CENT OF ALL STUDENTS WITH SATISFACTORY DAILY PATTERN



At all grade levels more boys than girls had satisfactory daily patterns for all food groups. The sex differences for grades K-3 and 4-6 were slight, but at the two secondary grade levels, sex differences were statistically significant.

In assessing the eating patterns of students and the impact of snack foods on the nutritional quality of diets, investigators concluded that where vending machine or a la carte programs are available in schools, special effort should be made to see that such programs included foods high in nutrients needed for satisfactory daily eating patterns. The impact of snacks for three food groups and a comparison of children who skipped breakfast and/or lunch with those who ate both meals may be noted in Table 15.

TABLE 15: STUDENTS WITH A SATISFACTORY DAILY PATTERN FROM REGULAR MEALS ONLY AND REGULAR MEALS PLUS SNACKS FOR THREE FOOD GROUPS

Food Group	Ate Breakfast RM +S		No Breakfast RM +S		Ate Lunch RM +S		No Lunch RM +S	
	Per Cent							
Milk	78	57	40	5	76	60	31	2
Vit. C	73	50	46	6	74	52	38	4
Vit. A	67	54	42	8	67	58	33	4

Footnote: RM — regular meals (breakfast, lunch, dinner)
S — snack periods

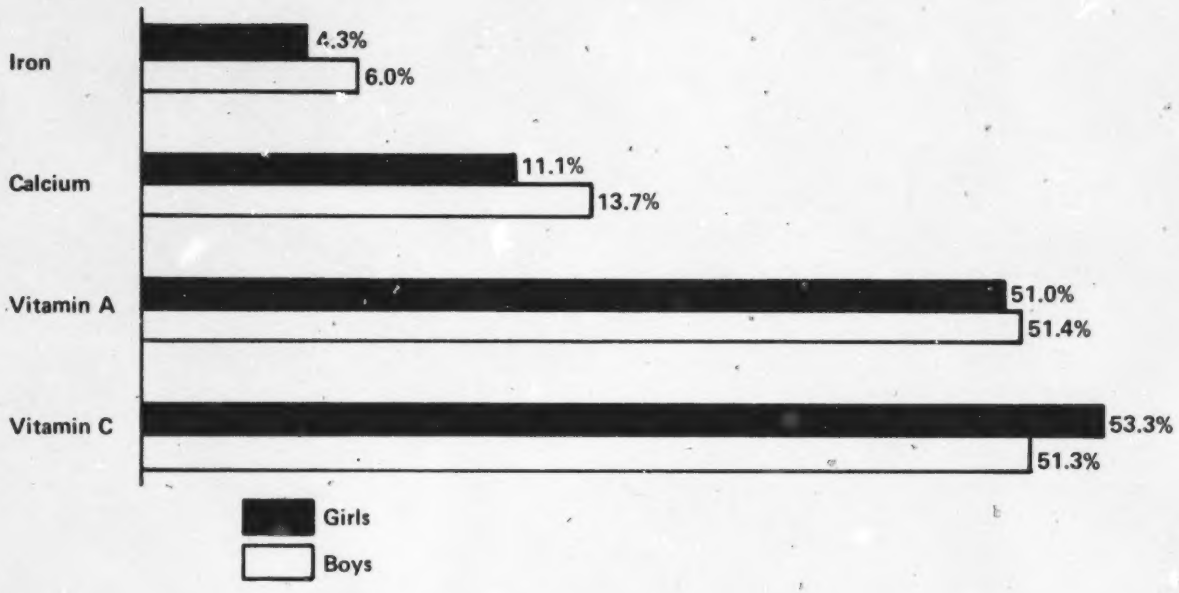
Data was gathered to determine which students took vitamin supplements. It was learned that students (K-3) with a satisfactory daily pattern were those most likely to take vitamin supplements. Almost 98 percent (97.98) who took vitamin supplements already had a satisfactory daily pattern without the supplements. Thus, older students who need vitamin supplements the most are not the ones who receive such supplements.

Of 620 students who had a satisfactory daily pattern for all meals and for all food except iron, 27 per cent took iron fortified vitamin supplements. The importance of providing nutritious snack foods is pointed up by the fact that approximately 27 per cent of the students who reported taking iron fortified vitamin supplements obtained the other nutrients to provide them with a satisfactory daily pattern from foods eaten at snack periods.

Eating Patterns for Regular Meals

Data in this survey revealed that some children may go as long as 17 hours without food if they do not eat breakfast or any snacks between the evening meal and lunch.

Figure 7: STUDENTS EATING NO BREAKFAST AND OMITTING FOODS WITH SPECIFIC NUTRIENTS FROM THE DAY'S FOOD INTAKE (REGULAR MEALS ONLY)



When queried as to why breakfast had not been eaten, students most commonly answered that they "did not have time." Others replied that they did not feel hungry at breakfast time or that the school bus ride made them sick if they ate breakfast.

The study shows that an average of 15.58 per cent of all respondents went to school without eating breakfast, and as the age of the child increased, the likelihood that he or she had no breakfast increased. Among students in grades 10-12, a three-day average of 28.51 per cent reported that they had not eaten breakfast. Nearly 1/3 (32.8 per cent) of the girls in grades 10-12 did not eat breakfast.

If students who missed breakfast selected foods which supply the missed nutrients throughout the remainder of the day, the pattern of skipping meals would not be serious. The effects of omitting breakfast from the daily eating pattern of children at all grade levels is illustrated in Figure 7. The four nutrients depicted are those which have been deficient in the diets of many children. Fifty-two per cent of the children who missed breakfast also failed to eat any of the Vitamin C source foods as listed on the questionnaire. The percentage for Vitamin A foods was approximately the same, indicating that more than half of the students who skipped breakfast did not report selecting foods throughout the remainder of the day which were considered good or fair sources of Vitamins A or C.

The advantages of eating breakfast were clearly demonstrated in a ten year study conducted at the University of Iowa.[22] Personal testimonies of administrators and teachers from schools which have initiated breakfast programs have verified the results of the Iowa study in that students are absent less frequently, present fewer discipline problems, and do better work in school when they have eaten breakfast.

TABLE 16: STUDENTS NOT EATING LUNCH, BY GRADE LEVEL AND SEX

Grade	Day One		Day Two		Day Three		Total
Level	Boys	Girls	Boys	Girls	Boys	Girls	Average
			Per Cent				
K-3	4.0	4.4	2.6	3.6	6.0	4.4	4.1
4-6	3.0	1.6	4.0	2.9	4.0	2.6	3.0
7-9	9.0	10.5	11.6	10.6	8.5	10.4	10.2
10-12	20.7	24.7	19.1	23.1	20.6	25.5	22.2
Ave. Totals	9.2	9.1	8.4	8.3	9.1	9.0	9.0

As illustrated in Table 16, an average of 9.02 of the students surveyed reported that they ate no lunch. Among grades 10-12 the figure increased to 22.20 per cent of students who miss lunch.

Although investigators sought to determine exactly why some children did not eat breakfast, they questioned students only about reasons for not eating the Type A lunch served in school lunchrooms. Students who did not eat the Type A lunch gave the following responses as some of their reasons:

Not available	32.50%
*Didn't like what was served	31.09
Costs too much	12.40
*Wait in line too long	8.02
I'm on a diet	7.05
*Cooks are grouchy	4.58
*Food is cold	2.97
Lost my money	0.94

Those reasons marked with an asterisk might be corrected by school food service personnel.

Since almost 1/3 of the students who didn't eat lunch said it was because they didn't like the foods served, more student involvement in the planning and evaluation processes of the program might encourage some of these students to eat lunch. In Pennsylvania the Chester Upland School District Food Service Director increased daily participation 500 per cent from 1,200 lunches in January 1970 to 5,350 lunches in January 1975. After an intensive in-service program for food service employees, he concentrated on organizing a student food service advisory committee to participate in bimonthly breakfast meetings. The director attributes part of this significant increase in participation to his work with the student committee.[17] Student involvement in the food service program, providing food choices within the Type A pattern and merchandising school lunches were among a variety of suggestions made by U.S.D.A. for increasing student participation.[21]

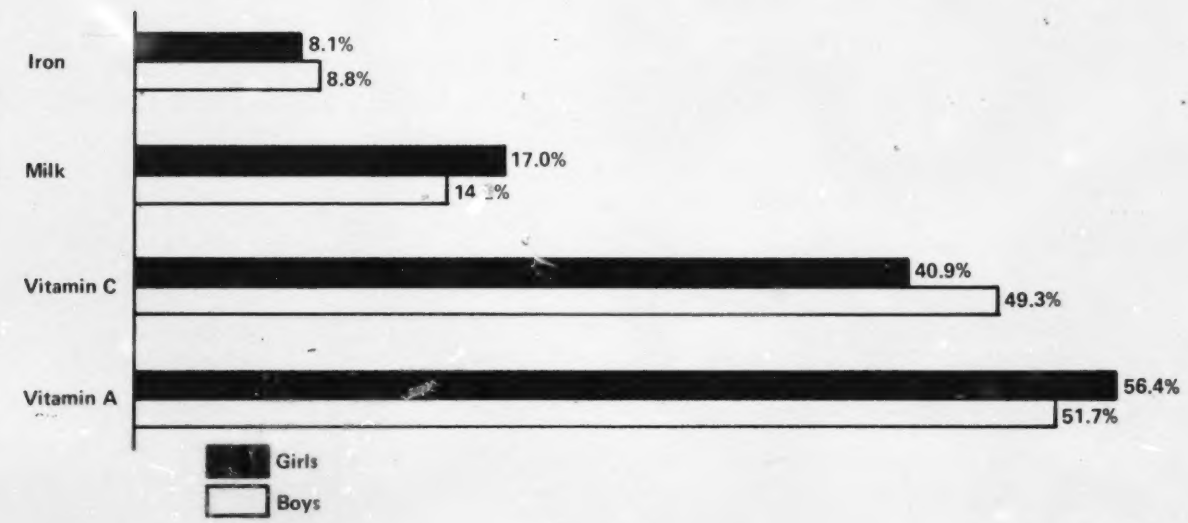
Figure 8 presents the effect of going without lunch upon the omission of foods containing specific nutrients from the other two regular meals during the 24-hour period.

Typical Breakfast, Lunch and Evening Meals

To determine a "typical" meal for respondents, the investigators tabulated "yes" responses for all foods on the questionnaire. Any food which was eaten by at least 10 per cent of the students at each grade level and sex was considered to be a typical item for the particular meal.

After all calculations were made at each grade level and for each sex, it was determined that a typical breakfast menu for Wisconsin school students consisted of fruit juice (especially citrus juices), dry or cooked cereals, eggs, jam or jelly. The fact that milk, bread, buns, butter or margarine were not recorded by enough students to make the typical menu suggests to investigators that students were inaccurate in their recall of these foods eaten possibly due to the

Figure 8: STUDENTS EATING NO LUNCH AND OMITTING FOODS WITH SPECIFIC NUTRIENTS FROM THE DAY'S FOOD INTAKE (REGULAR MEALS ONLY)



instrument form used. It doesn't seem reasonable that children would eat jelly or jam without bread or rolls of some kind or that they would eat cereal without milk.

Foods eaten by sufficient numbers of students to be listed as typical items on the lunch menu were more varied than breakfast items. Thus, a typical lunch menu would be composed of luncheon meat or wieners, peanut butter (except for girls grades 7-9 and all students 10-12), bread or buns, cheese (except for students in grades 7-9), casserole mixed dish (except for students in grades 7-9), potato chips, cookies or cakes, candy (except for students K-3 and boys 4-6).

Again, milk was noticeably absent from the typical lunch menu, as were fruits and vegetables and ice cream. Personal observation by investigators of the number of students who drink milk at lunch indicates that students simply failed to record this item.

Contrary to the opinion expressed by some cook-managers that lunch "is the only real meal children get during the day," this survey revealed that students recorded more "yes" responses to a larger number of listed foods for the evening meal than for any other meal or snack period. Although the survey questionnaire was administered immediately after lunch, and thus last evening's meal except for the snack period prior to the meal, was farthest away in point of time, students seemed to have less difficulty remembering what they ate for dinner than for the other two meals. More students remembered to include butter or margarine, bread, and milk with this meal than for the other meals.

A much larger assortment of foods was included in the typical evening meal: pork, beef or lamb, casserole dishes with meat, poultry, dried beans and peas, cheese, white potatoes, pasta, tomatoes, carrots, green beans and asparagus, bread or rolls with butter or margarine, ice cream, cookies or cake, and pop. Only girls in grades 7-12 recorded "yes" responses to drinking milk in large enough numbers to have this food become part of their "typical dinner pattern." This is the only meal in which any vegetables were recorded as eaten by ten per cent or more of students.

Influence of Snack Foods

In evaluating the impact of snack foods upon the daily nutritional eating pattern, investigators noted that when the pattern included skipping regular meals, the influence of snack foods was greater when lunch was missed than when breakfast was eliminated. (Refer to Table 15). Five per cent of those who ate no breakfast had a satisfactory daily pattern for the milk group foods at the lunch and evening meals; for those who reported eating no lunch, only two per cent achieved a satisfactory pattern for milk at the breakfast and evening meals. However, an additional 35 and 29 percent respectively, achieved a satisfactory daily pattern when snack foods consumed during the day were considered. This finding should encourage administrators and food service managers in schools which offer additional food choices in a la carte programs to provide foods which will help students meet their nutritional needs.

Significance of Fortified and Enriched Foods

The investigators were interested in the effect of highly fortified cereals and fruit drinks upon the satisfactory daily pattern for specific nutrient food groups. They found that fortified fruit drinks accounted for approximately 30 per cent of the Vitamin C foods consumed by all students, and there were no significant differences by sex or grade level.

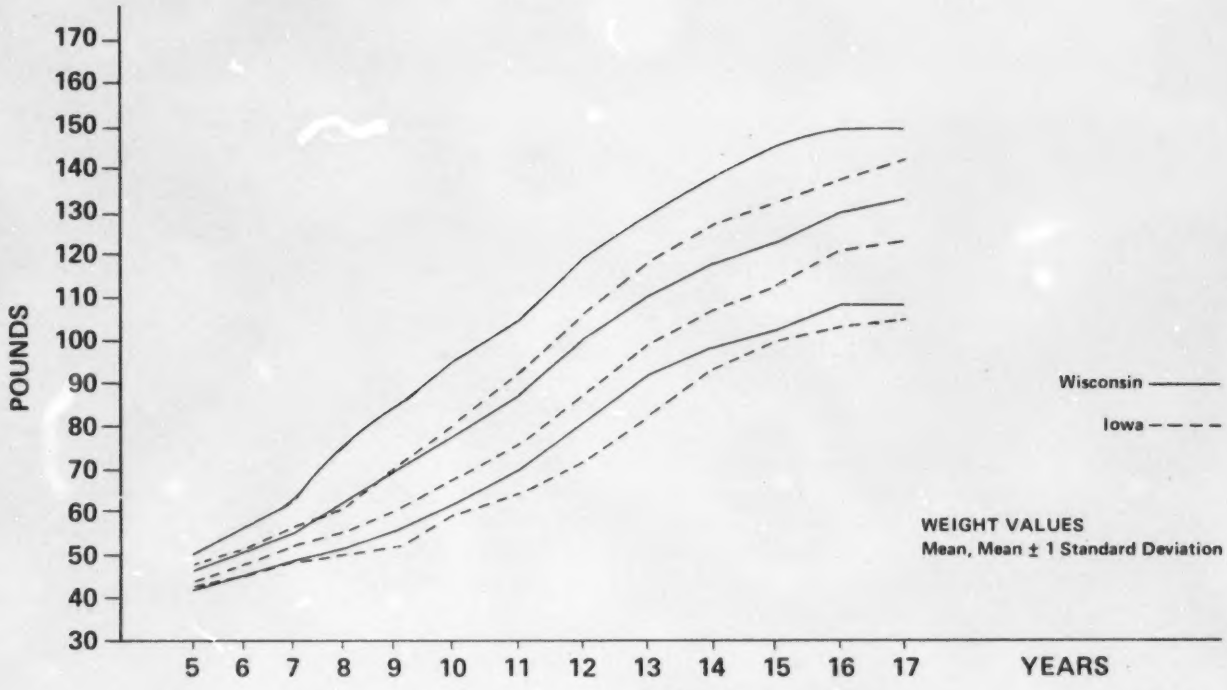
Only 4.3 percent of all students reported that they ate fortified cereals, whereas, 6.4 per cent reported eating other cereals. Again, there were no significant age or sex differences. Approximately 50.5 per cent of all students said they ate enriched bread products. Five per cent of both boys and girls said they did not know if the bread products they ate were enriched.

Height & Weight Averages for Wisconsin Children

The development of height-weight means and standards deviations was considered one of the more important aspects of the project. Each student participant was weighed and measured, thus generating data representative of Wisconsin children aged 5 to 18. In 1952 Watson and Lowrey[30] indicated that "many standards now in use cannot be applied to different racial groups or to groups from widely divergent geographic areas. Separate standards applicable to the subjects undergoing examination should be used."

Even though other nutritionists have agreed with Watson and Lowrey, very few have obtained data which would be representative of a geographic area such as a state. Hamill, Johnston and Lemeshow[31] as part of a national health survey which was supported by the U.S. Department of Health, Education and Welfare provided information which the investigators of this project would like to use for comparison. The study presents a cross-sectional percentile distribution of weight and height which represents an enormous but well-defined population. The study was done in two segments with two years between each segment. Children ages 6-11 and 12-17 years were weighed and measured. Some of the same students were included in both segments. Before a comparison could be made with this Wisconsin study,

Figure 9:


WISCONSIN-IOWA COMPARISON
WEIGHT CURVE—GIRLS
POUNDS
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
5 6 7 8 9 10 11 12 13 14 15 16 17
YEARS
Wisconsin
Iowa
WEIGHT VALUES
Mean, Mean ± 1 Standard Deviation

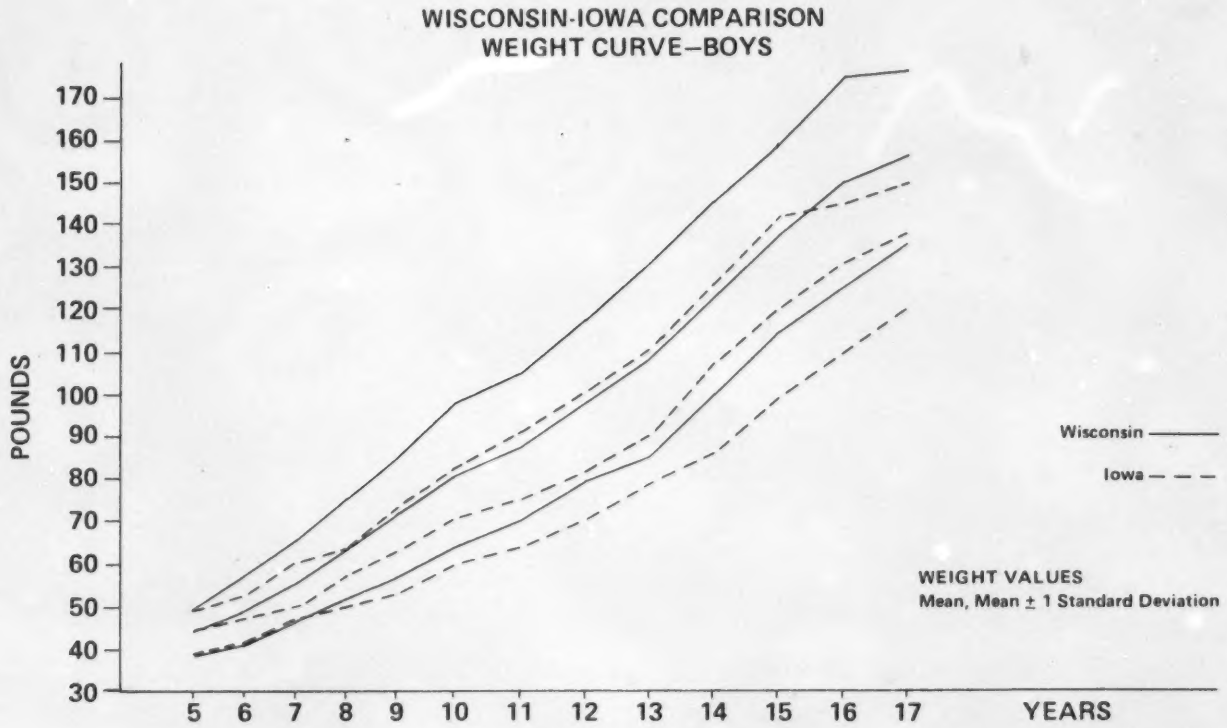
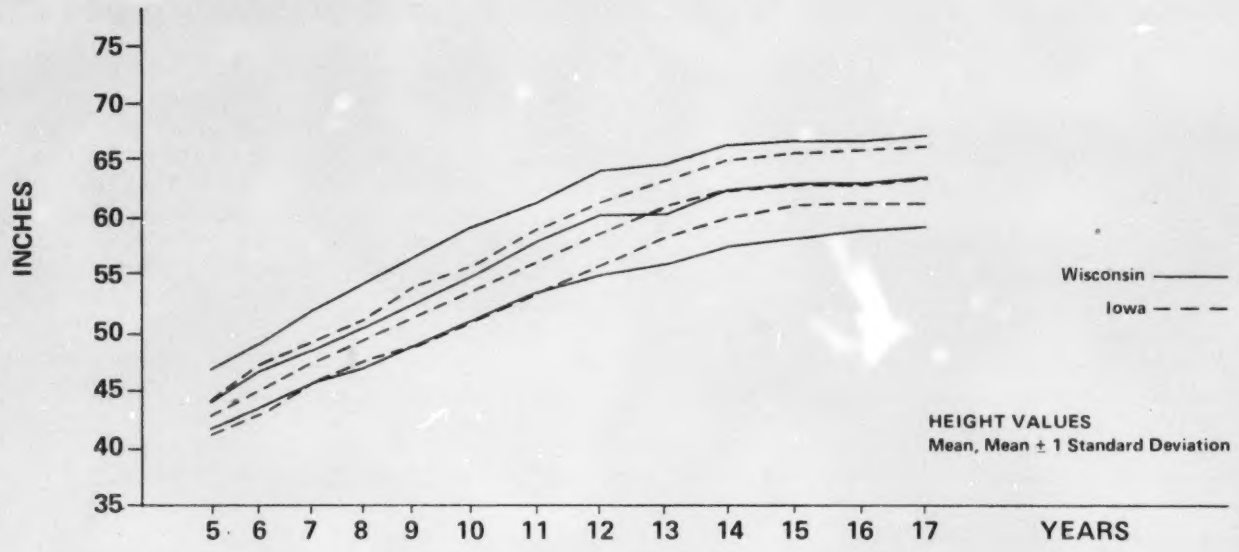
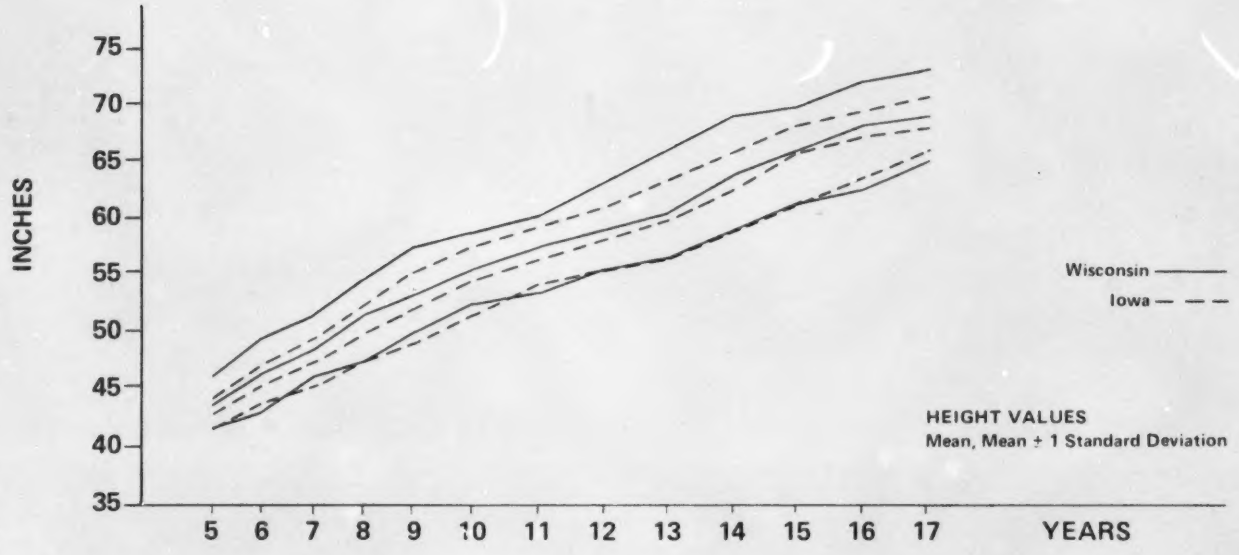

WISCONSIN-IOWA COMPARISON
WEIGHT CURVE—BOYS
POUNDS
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
5 6 7 8 9 10 11 12 13 14 15 16 17
YEARS
Wisconsin
Iowa
WEIGHT VALUES
Mean, Mean ± 1 Standard Deviation

Figure 10:

WISCONSIN-IOWA COMPARISON
HEIGHT CURVE–GIRLS



WISCONSIN-IOWA COMPARISON
HEIGHT CURVE–BOYS



the data for students who participated in both portions of the national health survey would have to be extracted.

Data from the National Health Survey[11] indicates that both boys and girls tend to be taller and heavier in the midwest and northeast than in the south or west. Our data shows Wisconsin children are taller and heavier than students in the 1964 Iowa Study[9] (See Figures 9 and 10). The Iowa height-weight charts were used to compare with Wisconsin because all ages of students were included in both studies. Studies by Tanner and others[26] as well as the Iowa study were made on clinical populations rather than representative samples of a large population; whereas, Wisconsin data is representative of children ages five to eighteen throughout the state. The Health Examination Survey (HES)[18] is representative of the entire United States population, ages six to seventeen.

Most of the clinical height-weight studies and charts used for reference by physicians and public health nurses were prepared from ten to thirty years ago. Many factors have exerted strong influences on the growth rates and weights of children since that time.

Hopefully, this study will provide the basis for continued study and research by graduate students. The data and charts presented may be used by public health practitioners and consultants, physicians, nurses, dietitians, school nurses and teachers.

Construction of the height-weight curves was based on a mean curve and standard deviation. Points plotted on the curve correspond to age and height and age and weight recorded in the present study. The middle curve shows the average or mean height or weight for a given age. The outside curves represent one standard deviation above and below the mean. Sixty-eight per cent of all students fall within the range between the top and bottom curves. In the present study, 75 per cent of all boys and girls had weights which were within the deviation parameters.

Eating Patterns Compared to Weight

Table 17 shows the percentages of underweight, normal and overweight children according to sex and grade level. This data was analyzed in an attempt to determine variations in eating patterns among the three groups; however, no significant differences in eating patterns were discovered.

When each meal and separate snack period was analyzed, however, significant differences between grade levels for both sexes emerged. For example, a higher percentage (42 per cent) of overweight children ate cookies, cakes, doughnuts, etc., with the evening meal than did underweight (32 per cent) or normal weight (31 per cent) children. On the other hand, fewer overweight or normal weight children (five per cent each group) ate these dessert foods at snack time than did underweight children (10 per cent). More overweight children reported eating jam and jelly with breakfast than did normal or underweight children.

The percentage of underweight and overweight boys, grades 7-12, who consumed three or more servings of bread and cereal each day were very similar. However, there was a 16 per cent difference between underweight and overweight girls in grades 10-12 for the number of times bread and cereal were consumed each day. Thirty per cent of the overweight and 46 per cent of the underweight girls responded "yes" to eating three or more servings of bread and cereal each day.

TABLE 17: UNDERWEIGHT, NORMAL, AND OVERWEIGHT CHILDREN, BY GRADE LEVEL AND SEX

Grade Level		Underweight		Normal		Overweight	
		Boys	Girls	Boys	Girls	Boys	Girls
K-3	N	88	77	540	531	90	86
	%	12.3	11.1	75.2	76.5	12.5	12.4
4-6	N	58	69	464	449	72	84
	%	9.8	11.4	78.1	74.6	12.1	14.0
7-9	N	63	65	367	342	75	70
	%	12.5	13.6	72.7	71.7	14.8	14.7
10-12	N	60	57	303	348	54	64
	%	14.3	12.2	72.7	74.2	13.0	13.6

All Grade Levels by Sex

	Underweight		Normal		Overweight	
	Boys	Girls	Boys	Girls	Boys	Girls
N	269	268	1674	1670	291	304
%	12.0	11.9	74.9	74.5	13.0	13.6

All Students

	Underweight	Normal	Overweight
N	537	3344	595
%	12.0	74.7	13.3

Note: The mean weight for each age group by sex was determined. Underweight and overweight children were those whose weight fell more than one standard deviation below and above the mean. See Figures 9 and 10 for graphic presentation of data.

Differences between underweight and overweight children were very small in the numbers of times that candy, chocolates, gum, potato or corn chips, pretzels, fruit pies or cream pies, pop, soda, soft drinks, and crackers were consumed. Also, there was no significant difference between the number of under- or overweight boys or girls with a satisfactory daily pattern for all meals.

Overweight children did not record eating any of the foods during the snack periods (including high calorie dessert type snacks) more often than did their normal or underweight peers. Survey data indicate that it was not the eating patterns for overweight school children which caused or sustained their excessive weight. Since the study made no attempt to obtain quantities of foods consumed, no accurate deduction could be made attributing the obesity of these children to amounts of foods eaten.

Bibliography

1. Adelson, Sadye F. "Changes in Diets of Households, 1955-1965." *Journal of Home Economics* 60(6): 448-455 June 1968.
2. Bettelheim, Bruno. *Food to Nurture the Mind.* The Children's Foundation, Washington, D.C. 1970.
3. Bills, Robert E. "Motivation: A Problem of Choice." *Wisconsin Journal of Public Instruction.* Spring 1972. 120-132.
4. Callahan, Dorothy L. "Focus On Nutrition: You Can't Teach a Hungry Child," *School Food Service Journal.* March 1971.
5. Callahan, Dorothy L. "Focus On Nutrition: You Can't Teach a Hungry Child." *School Food Service Journal.* September 1971.
6. Dobbins, Frances W., Al Jennings and Scott Tuxhorn. *A Report of Oklahoma Food Habits Survey.* School Lunch Division, Oklahoma Department of Education, Oklahoma City, 1970.
7. Deutsch, Ronald M. *The Family Guide to Better Food and Better Health.* Meredith Corporation, Des Moines, Iowa 1971.
8. Edwards, Cecile H., Gaynelle Hagan and Sandra Spohr. "Nutrition Survey of 6200 Teen-Age Youth." *Journal of the American-Dietetic Association* 45: 543-546. 1964.
9. Eppright, Ercel S., Emil Jehe, Virginia Sidwell. "Nutrition of 9, 10 and 11-Year Old Public School Children in Iowa, Kansas and Ohio." North Central Region Publication No. 59. Iowa Ag. Experiment Station. Amer, Iowa 1955.
10. Garvue, Robert J., Thelma G. Flanagan, William H. Castine. "School Food Service and Nutrition Education" Special Study No. 8. National Education Finance Project, 1971.
11. Hamil, Peter V.V., Francis E. Johnston, Stanley Lemeshow. "Height and Weight of Youths 12-17 Years, United States" Vital and Health Statistics Series 11, No. 124, U.S. Department of HEW, 1973.
12. Hampton, Mary C., Ruth L. Huenemann, Ruth L., Leona R. Shapiro, Barbara W. Mitchell. "Calorie and Nutrient Intakes of Teen-Agers" *Journal of American Dietetics Association.* 50(5): 385-396, 1967.
13. Johnson, Nancy E., Nitzke and Vande Berg. "NARS Validation Studies" *Home Economics Research Journal* 2:210, June 1974.
14. Lund, Lois A. and Marguerite C. Burk. Multi-disciplinary Analysis of Children's Food Consumption Behavior. Minnesota 1967.
15. National Center for Health Statistics: Plan and Initial Program of the Health Examination Survey. *Vital and Health Statistics PHS* Publication No. 1000 Series 1 No. 4 Public Health Service. Washington. U.S. Government Printing Office, July 1965.
16. National Center for Health Statistics: Cycle 1 of the Health Examination Survey: Sample and Response. *Vital and Health Statistics* PHS Publication No. 1000 Series 11 No. 1 Public Health Services. Washington, D.C. U.S. Government Printing Office.
17. "Nutrition Education Brings Schools Together" *School Food Service Journal,* October 1975. Volume 29. No. 9 pp. 33-36.
18. "Nutrition Education: Tracing a Five-Year Plan" *School Food Service Journal,* May 1976. Volume 30. No. 5 pp. 56-60.

19. O'Farrell, Michael J. and Jean L. Kendreck. "Educators' Attitudes Toward Nutrition Education in Florida." *Journal of Nutrition Education.* Winter 1972. 4(1): 15-16.

20. Post, Edward J., Jack Ninemeier, "Nutrition Education in the Classroom." Unpublished Issue Paper, Bureau of School Food Services, Wisconsin Department of Public Instruction, March 1970.

21. "Raising Participation the USDA Way." *School Food Service Journal,* June 1975. Volume 29. No. 6 pp. 39-40.

22. Roper, Elmo, *A Study of the Teaching of Nutrition in the Public Schools.* Cereal Institute, Inc. Chicago, Illinois 1951.

23. Schubert, Earl J. "Nutrition Education: How Much Can or Should Our Schools Do?" *Journal of Nutrition Education,* Summer 1970, pp. 9-13.

24. Sliepcevich, Elena M. "School Health Education Study—A Summary Report." School Health Education Study. Washing, 1964.

25. Stare, Frederick J., Margaret McWilliams. *Living Nutrition.* John Wiley and Sons, Inc. New York, 1973.

26. Tanner, J. M. "Growth at Adolescence." Second Edition, Oxford. Blackwell, 1962.

27. The Status of Nutrition Education: A Report on a Survey of USOE 51 SEA's and Selected LEA's and Private Schools." Education Commission of the States, Denver, Colorado, 1975.

28. Trulson, Martha D., Mark Hegsted, and Frederick J. Stare. "New York State Nutrition Survey I. A Nutrition Survey of Public School Children." *Journal of the American Dietetic Association* 25: 595-605, 1949.

29. University of the State of New York. *Health Curriculum Materials, Physical Health. Nutrition Strands I, II, III and IV: Special edition for evaluation and discussion.* Albany, New York, 1970.

30. Watson, E.H., and G. H. Lowrey. *Growth and Development of Children.* Year Book Publishers, Chicago, 1952.

31. "White House Conference on Food, Nutrition and Health." Final Report. U.S. Government Printing Office. Washington, D.C., 1971.

32. "Working and Learning in School Foodservice." *School Food Service Journal.* November-December 1975. Volume 29. No. 10 pp. 66-71.

APPENDIX

Principals and Teachers

Table 18
Per Cents and Numbers of Principals (by School Location and School Organization) Sampled in Principal Sample

School Organization	Per Cent in Population		Numbers in Sample		Total Numbers
	Milwaukee	Non-Milwaukee	Milwaukee	Non-Milwaukee	
K-6	5.44	64.31	31	374	405
Middle		3.72		22	22
Junior High	.81	7.46	5	43	48
6 yr. Secondary	.13	.94	1	6	7
4 yr. Secondary	.30	13.54	2	79	81
3 yr. Secondary	.26	3.09	2	18	20
Totals	6.94	93.06	41	542	583

Table 19
Per Cents and Numbers of Teachers (by Grade and Location) Sampled in Teacher Sample

School Location	Pupil Teacher Ratio	Per Cent in Population				Numbers in Sample				Total Numbers
		K-3	4-6	7-9	10-12	K-3	4-6	7-9	10-12	
Milwaukee	21.52	4.06	2.84	2.93	2.91	41	29	30	29	129
Non-Milwaukee	22.85	28.80	22.59	24.19	24.42	288	225	241	244	998
Totals						329	254	271	273	1127

School Location	Number teachers from each school to be randomly chosen for Sample			
Milwaukee	4	3	8	7
Non-Milwaukee	3	2	6	7
	K-3	4-6	7-9	10-12

Table 20
Numbers of Schools (by type and grade) and Students (within school types and grades) Sampled in Student Sample

A. Schools by Type and Grade: Minimum, Overage, and Total Numbers

School Types		K-3			4-6			7-9			10-12			Totals			Per-
		Min.	Over.	Total	Min.	Over.	Total	Min.	Over.	Total	Min.	Over.	Total	Min.	Over.	Total	cents
Milwaukee		10	2	12	10	2	12	3	1	4	3	1	4	26	6	32	9.00
	Large	31	5	36	37	6	43	9	2	11	8	2	10	85	15	100	28.00
Non-Milwaukee	Medium	32	6	38	33	6	39	13	2	15	11	2	13	89	16	105	29.00
	Small	41	7	48	41	7	48	13	2	15	9	2	11	104	18	122	33.00
Totals		114	20	134	121	21	142	38	7	45	31	7	38	304	55	359	100.00

B. Students within School Type and Grades: Minimum, Overage, Total Numbers

Milwaukee		163	81	244	114	57	171	117	59	176	116	58	174	510	255	765	13.00
	Large	592	296	888	511	255	766	518	259	777	524	262	786	2145	1072	3217	53.00
Non-Milwaukee	Medium	288	144	432	204	102	306	250	125	375	253	126	379	995	497	1492	25.00
	Small	110	55	165	75	38	113	82	41	123	83	42	125	350	176	526	9.00
Totals		1153	576	1729	904	452	1356	967	484	1451	976	488	1464	4000	2000	6000	100.00

C. Number Students within each School to be Randomly Chosen for Sample

		K-3	4-6	7-9	10-12
Milwaukee		20	14	44	44
	Large	25	18	71	79
Non-Milwaukee	Medium	11	8	25	29
	Small	4	3	8	11

Table 21
Description of Large, Medium, and Small School Sizes for Non-Milwaukee Schools

A. K-3 and 4-6 Strata

School Size	Number Students in Schools	Number Schools		Per Cent Schools		Per Cent Students*	
		K-3	4-6	K-3	4-6	K-3	4-6
Large	400 - 1300	450	524	30.00	33.00	14.79	12.77
Medium	200 - 399	465	476	31.00	30.00	7.18	5.10
Small	1 - 199	586	588	39.00	37.00	2.77	1.88
Totals		1501	1588	100.00	100.00	24.74	19.75

B. 7-9 and 10-12 Strata

School Size	Number Students in Schools	Number Schools		Per Cent Schools		Per Cent Students*	
		7-9	10-12	7-9	10-12	7-9	10-12
Large	700 - 3500	114	123	28.00	30.00	12.96	13.11
Medium	300 - 699	184	156	36.00	38.00	6.25	6.32
Small	1 - 299	184	131	36.00	32.00	2.05	2.08
Totals		512	410	100.00	100.00	21.26	21.51

*Percentages are approximate and are of the total student population in State during the 1972-73 school year. 87.26 per cent of students were enrolled in non-Milwaukee schools, the figure to which the four strata per cents will add.

Table 22
Description of Schools and Student
Population Breakdowns for Milwaukee and Non-Milwaukee Schools

A. Description of Schools in Grade Strata

School	Number Schools*				Per Cent Schools				
Location	K-3	4-6	7-9	10-12	K-3	4-6	7-9	10-12	Total
Milwaukee	127	127	29	16	2.95	2.95	.67	.38	6.95
Non-Milwaukee	1501	1588	512	410	34.82	36.84	11.88	9.51	93.05
Totals	1628	1715	541	426	37.77	39.79	12.55	9.89	100.00

B. Description of Students in Grade Strata

School	Per Cent Students				
Location	K-3	4-6	7-9	10-12	Totals
Milwaukee	4.06	2.84	2.93	2.91	12.74
Non-Milwaukee	24.74	19.75	21.26	21.51	87.26
Totals	28.80	22.59	24.19	24.42	100.00

*School, for purposes of sampling, are counted more than once if they had students in more than one grade category. They will therefore not total 2340, which was the number of school buildings in 1972-73.

OMB - 40 - S72085
APPROVAL EXPIRES 2-28-74

DO NOT WRITE IN THIS BOX	CO	DISTRICT	SCHOOL	P

WISCONSIN NUTRITION EDUCATION SURVEY
FOOD SERVICE MANAGERS

WISCONSIN
DEPARTMENT OF PUBLIC INSTRUCTION
Barbara Thompson, Ph.D., State Superintendent

UNITED STATES
DEPARTMENT OF AGRICULTURE
Food and Nutrition Service

This survey consists of questions or statements which have no right or wrong answer; your personal opinion is wanted. Read each statement or question carefully and decide what you think about it. USING A NUMBER 2 PENCIL, BLACKEN THE CIRCLE NEXT TO THE ANSWER YOU CHOOSE. ERASE COMPLETELY ANY THING YOU WANT TO CHANGE. For this survey, nutrition education is defined as: "The knowledge of food, how the body uses it, and the application of this knowledge to the formation of good eating habits."

1. Please mark the number of years you have worked in the school lunch program.
   - ○ 0 - 2 years
   - ○ 3 - 5 years
   - ○ 6 - 7 years
   - ○ 8 or more years

2. Please mark courses taken in preparation for your position.
   - ○ On the job training
   - ○ Short Course I (area Vocational School)
   - ○ Intermediate Short Course
   - ○ Advanced Short Course
   - ○ WFSA workshop(s)
   - ○ Workshops conducted by DPI
   - ○ College course or workshops
   - ○ Other (specify briefly below)

DO NOT WRITE OUTSIDE DOUBLE LINES

3. Have you taken courses in nutrition education?
   ○ Yes ○ No

4. Who plans the Type A school lunch menus used in your school?
   - ○ Cook manager(s)
   - ○ District supervisor
   - ○ Home economics teacher

5. Is a daily check made to determine the amount of plate return?
   ○ Yes ○ No

6. Are all children required to take a small portion of each menu item served?
   ○ Yes ○ No

7. Please indicate the number of different main dish foods served in your school during the month of September, 1973.
   - ○ 0 to 5
   - ○ 6 to 10
   - ○ 11 to 15
   - ○ 16 to 20
   - ○ 20 or more

8. Please indicate the number of different kinds of vegetables that were served during the month of September. Include those used in salads and relishes.
   - ○ 0 to 3
   - ○ 4 to 7
   - ○ 8 to 11
   - ○ 12 to 15
   - ○ 16 or more

9. Do some of the children in your school: (Mark one or more)
   - ○ Go home for lunch?
   - ○ Buy their lunch at local stores?
   - ○ Eat no lunch?

10. How long are lunch periods in your school?
    - ○ less than 20 minutes in length
    - ○ 20 minutes in length
    - ○ 20 to 30 minutes
    - ○ 30 to 40 minutes
    - ○ longer than 40 minutes

11. Are students permitted to leave the dining area when they have finished eating?
    ○ Yes ○ No

12. Is the dining area in your school:

	Yes	No
Clean?	○	○
Attractively painted?	○	○
Well lighted?	○	○
Decorated with posters, etc., for special occasions?	○	○
Too crowded for comfortable eating?	○	○

13. Which individuals encourage students to taste all foods served at lunch? (Mark one or more)
    - ○ Teachers
    - ○ Cooks and servers
    - ○ Principal
    - ○ Administrator
    - ○ Food Service supervisor
    - ○ No one

NCS Trans Optic F 1864 54321 SIDE 1 JULY 1973

14. How are school children involved in the lunch program? (Mark one or more)

- ○ Suggesting menu items
- ○ Making posters
- ○ Working on tasting panels
- ○ Suggesting lunchroom policies or procedures for service
- ○ Offering opinion of foods served
- ○ Working in the kitchen or dishroom
- ○ Students are not involved in any way

DO NOT WRITE IN THIS SPACE

15. Please rate the following reasons for the food service program in your school. (Mark the appropriate response for each)

	VERY IMPORTANT	MODERATELY IMPORTANT	SLIGHTLY IMPORTANT	NOT IMPORTANT
A. A convenience for parents	○	○	○	○
B. A means of meeting at least 1/3 of students' daily dietary needs	○	○	○	○
C. A learning laboratory for nutrition education	○	○	○	○
D. A means of providing a meal for children of working mothers	○	○	○	○
E. To provide free meals for economically deprived children	○	○	○	○
F. To help children form good food habits	○	○	○	○

16. What resource materials generally are available in your school for nutrition education? (Mark one or more)

- ○ Text books
- ○ Library reference books
- ○ Foods
- ○ Food models
- ○ Magazines
- ○ Overhead transparencies
- ○ Field trips
- ○ Films
- ○ Film strips
- ○ Posters
- ○ Other (specify briefly below)

DO NOT WRITE OUT SIDE DOUBLE LINES

17. What is your role in nutrition education for the students in your school? (Mark one or more)

- ○ To act as a resource person for teachers
- ○ To encourage students to try new foods
- ○ I have no role in nutrition education for students
- ○ Other (specify briefly below)

DO NOT WRITE OUTSIDE DOUBLE LINES

18. How are nutrition problems of students discussed with their parents? (Mark one or more)

- ○ At PTA meetings
- ○ At parent teacher conferences
- ○ By sending materials home with students
- ○ With the help of school nurse
- ○ Not discussed

19. Do you agree or not that adults in your community are interested in learning more about nutrition? (Mark one)

- ○ Strongly agree
- ○ Agree
- ○ No opinion
- ○ Disagree
- ○ Strongly disagree

20. Which of the following would be the best topics to cover in parent nutrition education programs? (Mark one or more)

- ○ The advantages of eating a good breakfast
- ○ The advantages of eating a good lunch
- ○ Food needs of different ages
- ○ Selection of snack foods
- ○ How food affects physical development
- ○ Food choices of school age children
- ○ School food service contribution to nutrition
- ○ Organic foods
- ○ Special diets and weight control

21. Indicate the method you think would be best for presenting a parent nutrition education program. (Mark one or more)

- ○ Parent-teacher organizations
- ○ Educational television
- ○ Special classes for parents of students
- ○ Articles in newspapers or magazines
- ○ Special workshops presented by University or Department of Public Instruction personnel

WISCONSIN NUTRITION EDUCATION SURVEY
FOOD SERVICE MANAGERS
SIDE 2 JULY, 1973

PI-SFS-Q-15 (6-73)

WISCONSIN NUTRITION EDUCATION SURVEY
PRINCIPALS' FORM

OMB-40-572085
Approval Expires 2-28-74

WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION
BARBARA THOMPSON, PH.D. STATE SUPERINTENDENT

UNITED STATES DEPARTMENT OF AGRICULTURE
FOOD AND NUTRITION SERVICE

County Number	District Number	School Number	District Name	School Name

This survey consists of a number of questions and statements which have no right or wrong answers. Your personal opinion is wanted. Carefully read each question or statement and decide what you think about it. CHECK THE CORRESPONDING BOX TO THE LEFT OF YOUR RESPONSE. ERASE COMPLETELY ANYTHING YOU WISH TO CHANGE.

For this survey, NUTRITION EDUCATION is defined as "the knowledge of food, how the body uses it and the application of this knowledge to the formation of good eating habits."

SECTION A.

1. Is nutrition education taught in your school? (Check One)
   - ☐ Yes
   - ☐ No (Proceed to Section B)

2. At what grade level is Nutrition Education provided in your school? (Check All That Apply)
   - ☐ K-3 (Elementary)
   - ☐ 4-6 (Elementary)
   - ☐ 7-9 or 6-8 (Jr. High or Middle School)
   - ☐ 10-12 or 9-12 (High School)

3. In what courses is Nutrition Education offered?
   - ☐ As a separate course offered with an identifying title?
   - ☐ As an integrated subject with the following courses. (Check All That Apply)
     - ☐ Reading
     - ☐ English Language Arts
     - ☐ Mathematics
     - ☐ Art
     - ☐ General Health Education
     - ☐ Elementary Science
     - ☐ Biology
     - ☐ Physiology
     - ☐ Chemistry
     - ☐ Other Science
     - ☐ Home Economics
     - ☐ Physical Education
     - ☐ Social Studies
     - ☐ Other

4. Who is the person(s) responsible for initiating Nutrition Education in your school? (Check All That Apply)
   - ☐ Teacher(s)
   - ☐ Parents
   - ☐ Principal
   - ☐ District Administrator
   - ☐ School Board of Education
   - ☐ Other (Specify) _____

5. What resource person(s) was/were used by teachers in your school to teach Nutrition Education? (Check All That Apply)
   - ☐ Home Economics Teacher
   - ☐ Nurse
   - ☐ School Lunch Supervisor
   - ☐ Dairy Council Consultant
   - ☐ Hospital Dietitian
   - ☐ Public Health Nutritionist
   - ☐ County Extension Home Economist
   - ☐ University or College Nutrition Teacher
   - ☐ Other Teachers Within the School
   - ☐ Other (Specify) _____

6. What resource materials generally were available in your school for Nutrition Education? (Check All That Apply)
   - ☐ Textbooks
   - ☐ Library Reference Books
   - ☐ Foods
   - ☐ Food Models
   - ☐ Magazines
   - ☐ Field Trips
   - ☐ Films
   - ☐ Film Strips
   - ☐ Posters
   - ☐ Overhead Projector Transparencies
   - ☐ Other (Specify) _____

SECTION B.

1. Who do you think is the most appropriate person to give lessons in Nutrition Education? (Check The Most Appropriate One)
   - ☐ Elementary Teachers
   - ☐ Nutrition Education Specialist
   - ☐ School Nurse
   - ☐ Dietitian
   - ☐ Biology or Science Teacher
   - ☐ Specialist (Home Economics or Health Science Teacher)
   - ☐ Other (Specify) _____
   - ☐ No Opinion

(CONTINUED TO PAGE 2)

SECTION B. (Continued)

2. At what grade level do you think Nutrition Education should be offered? (Check One)
   - ☐ At Every Grade Level
   - ☐ In K Through 6
   - ☐ In Grades 7 Through 9
   - ☐ In Grades 10 Through 12
   - ☐ Other (Specify) _____
   - ☐ No Opinion

3. How might additional training for teachers responsible for Nutrition Education subjects best be provided? (Check One)
   - ☐ In-service Training Programs (Workshops)
   - ☐ In Seminars
   - ☐ Through University Extension Course
   - ☐ In Summer School Courses
   - ☐ In Regular University Undergraduate and Graduate Courses
   - ☐ Other (Specify) _____
   - ☐ No Opinion

4. What should additional training for teachers in Nutrition Education focus on? (Check All That Apply)
   - ☐ Teaching Methodology
   - ☐ Content (Curriculum)
   - ☐ Principles of Nutrition
   - ☐ Use of Nutrition Teaching Aids
   - ☐ No Opinion

SECTION C.

1. Do sc[illegible]e children in your school (Check All That Apply)
   - ☐ Go Home for Lunch?
   - ☐ Buy their Lunch at Local Stores?
   - ☐ Eat No Lunch?

2. How long are lunch periods in your school? (Check One)
   - ☐ Less Than 20 Minutes in Length
   - ☐ 20 Minutes in Length
   - ☐ 20 to 30 Minutes
   - ☐ 30 to 40 Minutes
   - ☐ Longer Than 40 Minutes

3. Are the students permitted to leave the dining area when they have finished eating? (Check One)
   - ☐ Yes
   - ☐ No

4. Is the dining area in your school: (Check All That Apply)
   - ☐ Yes ☐ No Clean?
   - ☐ Yes ☐ No Attractively Painted?
   - ☐ Yes ☐ No Well Lighted?
   - ☐ Yes ☐ No Decorated with Posters etc. for Special Occasions
   - ☐ Yes ☐ No Too Crowded for Comfortable Eating

SECTION C. (Continued)

5. Does your school participate in a school lunch program? (Check One)
   - ☐ Yes
   - ☐ No (Proceed to Section D)

6. How are school children involved in the lunch program? (Check All That Apply)
   - ☐ Suggesting Menu Items
   - ☐ Making Posters
   - ☐ Working on Tasting Panels
   - ☐ Suggesting Lunchroom Policies or Procedures for Service
   - ☐ Offering Opinion of Foods Served
   - ☐ Working in the Kitchen or Dishroom
   - ☐ Students are not Involved in Any Way

7. Please rate the following reasons for having the food service program in your school: (Check One Rating For Each Reason)

IMPORTANT				
Very	Moderate	Slight	Not	
☐	☐	☐	☐	A Convenience for Parents
☐	☐	☐	☐	A Means of Meeting at Least 1/3 of Student's Daily Dietary Needs
☐	☐	☐	☐	A Learning Laboratory for Nutrition Education
☐	☐	☐	☐	A Means of Providing a Meal for Children of Working Mothers
☐	☐	☐	☐	To Provide Free Meals for Economically Deprived Children
☐	☐	☐	☐	To Help Chiloren Form Good Food Habits

SECTION D.

1. Do you agree or disagree that a comprehensive health education curriculum should include nutrition? (Check One)
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ No Opinion
   - ☐ Disagree
   - ☐ Strongly Disagree

2. Do you agree or disagree that the Department of Public Instruction should provide a Nutrition Education curriculum guide for teacher's use in preparing lesson plans for Nutrition Education? (Check One)
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ No Opinion
   - ☐ Disagree
   - ☐ Strongly Disagree

3. Do you agree or disagree that all prospective teachers should be required to take a course in nutrition? (Check One)
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ No Opinion
   - ☐ Disagree
   - ☐ Strongly Disagree

THANK YOU FOR YOUR COOPERATION IN COMPLETING THIS SURVEY

PI-SPS-Q-16 (8- 1)

WISCONSIN NUTRITION EDUCATION SURVEY
TEACHER'S FORM

OMB 40 672085
Approval Expires 2-28-74

WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION
BARBARA THOMPSON, PH.D. STATE SUPERINTENDENT

UNITED STATES DEPARTMENT OF AGRICULTURE
FOOD AND NUTRITION SERVICE

County Number	District Number	School Number	District Name	School Name

This survey consists of a number of questions and statements which have no right or wrong answers. Your personal opinion is wanted. Carefully read each question or statement and decide what you think about it. CHECK THE CORRESPONDING BOX TO THE LEFT OF YOUR RESPONSE. ERASE COMPLETELY ANYTHING YOU WISH TO CHANGE.

For this survey, NUTRITION EDUCATION is defined as "the knowledge of food, how the body uses it and the application of this knowledge to the formation of good eating habits."

A-1. Please mark the grade level you teach this year:
- ☐ K-3 (Elementary) (Check All That Apply)
- ☐ 4-6 (Elementary)
- ☐ 7-9 or 7-8 (Jr. High or Middle School)
- ☐ 10-12 or 9-12 (High School)

A-2. Do you ever eat lunch at school? (Check One)
- ☐ Yes, I use the school food service program
- ☐ Yes, but I do not use school lunch facilities
- ☐ No

A-3. Is it part of your job responsibilities to supervise children at lunchtime? (Check One)
- ☐ Everyday
- ☐ Less Than Everyday But at Least Once a Week
- ☐ Less Than Once a Week
- ☐ Never (Go to Question 5)

A-4. If you do have supervisory responsibility at lunchtime, is other free time scheduled for you? (Check One)
- ☐ Yes
- ☐ No

A-5. Describe your background in nutrition. (Check All That Apply)
- ☐ Took a Regular College Course in Food and/or Nutrition
- ☐ Studied Nutrition in Connection with other College Subjects
- ☐ Attended a Nutrition Workshop and/or Inservice Training Course
- ☐ Learned About Nutrition on My Own
- ☐ Never Studied Nutrition

A-6. Would you be willing to attend any of the following Nutrition Education courses?
- ☐ Yes (If Yes, Check All That Apply)
  - ☐ Graduate Credit Course Taught in Summer School
  - ☐ Graduate Credit Course Taught in your Area During the Year
  - ☐ Non-Credit Workshop or Short Course
  - ☐ Correspondence Course
- ☐ No

B-1. Did you teach a nutrition unit in any of your courses last school year? (Check One)
- ☐ Ye
- ☐ No (Go to Question C-1)

B-2. Indicate the grade level you taught last year (Check All That Apply)
- ☐ K-3 (Elementary)
- ☐ 4-6 (Elementary)
- ☐ 7-9 or 6-8 (Jr. High or Middle School)
- ☐ 10-12 or 9-12 (High School)

B-3. Who is/are the person(s) responsible for initiating Nutrition Education in your school? (Check All That Apply)
- ☐ Teacher(s)
- ☐ Parents
- ☐ Principal
- ☐ District Administrator
- ☐ School Board of Education
- ☐ Other (Specify) _____

B-4. Did you teach nutrition to? (Check One)
- ☐ Girls Only
- ☐ Boys Only
- ☐ Both

B-5. Approximately how many hours of Nutrition Education did each student taught by you receive during the last year? (Check One)
- ☐ 0-2 Hours
- ☐ 3-5 Hours
- ☐ 6-10 Hours
- ☐ More Than 10 Hours

B-6. Which guides did you use in teaching Nutrition Education? (Check All That Apply)
- ☐ Local School District Curriculum
- ☐ Building Curriculum
- ☐ Curriculum Developed by myself
- ☐ Curriculum Developed by Myself and Others (Specify) _____
- ☐ Other (Specify) _____

B-7. In what courses did you teach Nutrition?

- ☐ As a Separate Course Offering with an Identifying Title
- ☐ As an Integrated Subject with the Following Courses (Check All That Apply)
  - ☐ Reading
  - ☐ English Language Arts
  - ☐ Mathematics
  - ☐ Art
  - ☐ General Health Education
  - ☐ Elementary Science
  - ☐ Biology
  - ☐ Physiology
  - ☐ Chemistry
  - ☐ Other Science
  - ☐ Home Economics
  - ☐ Physical Education
  - ☐ Social Studies
  - ☐ Other

B-8. What resource person(s) was/were used in your Nutrition Education unit? (Check All That Apply)

- ☐ Home Economics Teacher
- ☐ Nurse
- ☐ School Lunch Supervisor
- ☐ Dairy Council Consultant
- ☐ Hospital Dietitian
- ☐ Public Health Nutritionist
- ☐ County Extension Home Economist
- ☐ University or College Nutrition Teacher
- ☐ Other Teachers Within the School
- ☐ Other (Specify) _____

B-9. What resource materials generally were available in your school for Nutrition Education? (Check All That Apply)

- ☐ Textbooks
- ☐ Library Reference Books
- ☐ Foods
- ☐ Food Models
- ☐ Magazines
- ☐ Field Trips
- ☐ Films
- ☐ Film Strips
- ☐ Posters
- ☐ Overhead Projector Transparencies
- ☐ Other (Specify) _____

B-10. Which of the following Biological or Social topics did you emphasize in your Nutrition unit? (Check All That Apply)

- ☐ Source of Food
- ☐ Culture Food Patterns
- ☐ Individual Food Habits
- ☐ Importance of Food in History
- ☐ Problems of Hunger in the World
- ☐ Eating a Well Balanced Diet
- ☐ Importance of a Good Breakfast
- ☐ Weight Reduction Diets
- ☐ Results of Overeating (Obesity)
- ☐ Positive Results of Good Nutrition (Strong Bones, Good Complexion, General Well Being)
- ☐ Which Foods are Sources of Nutrients (Protein, Minerals, etc.)

(CONTINUED TO TOP OF PAGE)

B-10. (Continued)

- ☐ Function of Nutrients
- ☐ Results of Deficiencies of Nutrients (Such as Rickets)
- ☐ How Food is Digested
- ☐ How Food Nourishes Cells
- ☐ Other (Specify) _____

B-11. In the first column, please check the method you used in your Nutrition Education Unit. In the second column please check the methods that were most successful.

Method Used	Most Successful Method	
☐	☐	Tasting New and Unfamiliar Foods
☐	☐	Learning to Identify New Foods
☐	☐	Using Food Models
☐	☐	Encouraging Children to Taste All Food Served at School Lunch
☐	☐	Planning Menus for School Lunch
☐	☐	Having Children Check if They are Eating Enough of a Particular Food (For Example, Milk)
☐	☐	Having Children Develop Plan for Improving Food Practices
☐	☐	Keeping and/or Revising Records of Food Eaten in One Day
☐	☐	Conducting Small Animal Feeding Demonstrations
☐	☐	Classification of Foods According to Four Food Groups
☐	☐	Planting Vegetable Seeds and Watching Them Grow
☐	☐	Discussing How Much of Various Foods are Needed for Growth and Health
☐	☐	Evaluating Progress in Improving Children's Food Practices
☐	☐	Making Surveys of Food Wasted by Grade Groups at School Lunch
☐	☐	Surveying Food Habits of Members of Class and Their Families
☐	☐	Comparing Costs of Different Kinds of Food
☐	☐	Going on Field Trips to Show How Foods are Produced and/or Marketed in Community
☐	☐	Studying Food Habits of People From Other Parts of the U.S. and/or World
☐	☐	Using Resource People to Come and Tell About Food
☐	☐	Lectures
☐	☐	Discussions
☐	☐	Using Films or Film Strips
☐	☐	Discussing Weight and Height Measurement of Children in Class

56

OMB-40-572085
Approval Expires 2-28-74

B-12. How do you rate nutrition textbooks or reference books for student use in your class?
(Check One)
- ☐ Completely Adequate (Go to Question B-14)
- ☐ Somewhat Adequate
- ☐ Somewhat Inadequate
- ☐ Completely Inadequate
- ☐ No Textbooks Available

B-13. What, if any, were the problem(s) with the textbooks or references you used for Nutrition Education?
(Check All That Apply)
- ☐ Not Enough Material on Nutrition
- ☐ Material Too Advanced for Grade Level
- ☐ Material too Simple for Grade Level
- ☐ Material Out of Date
- ☐ Material not Interesting
- ☐ No Problems

B-14. Please list the primary student text or reference book used in your Nutrition Education unit

Title _____

Author _____

Publisher _____

Year _____

C-1. Please check the school grade level in which you think it is best to start Nutrition Education:
(Check One)
- ☐ K-3 (Elementary)
- ☐ 4-6 (Elementary)
- ☐ 7-9 or 6-8 (Jr. High or Middle School)
- ☐ 10-12 or 9-12 (High School)
- ☐ Not Appropriate for the Classroom

C-2. How do you feel about the statement that teaching children nutrition concepts will lead to better eating habits? (Check One)
- ☐ Strongly Agree
- ☐ Agree
- ☐ No Opinion
- ☐ Disagree
- ☐ Strongly Disagree

C-3. What proportion of students in your classes do you estimate actually have three well balanced meals a day?
- ☐ Less Than 1/4
- ☐ 1/4 to 1/2
- ☐ 1/2 to 3/4
- ☐ Over 3/4

C-4. When students do not have three well-balanced meals, which one of the three meals do you think is most apt to be neglected? (Check One)
- ☐ Breakfast
- ☐ Noon Meal
- ☐ Night Meal

C-5. How are nutrition problems of students discussed with their parents? (Check All That Apply)
- ☐ At PTA Meetings
- ☐ At Parent-Teacher Conferences
- ☐ By Sending Materials Home with Students
- ☐ With Help of School Nurse
- ☐ Not Discussed

C-6. Do you agree or disagree that adults in your community are interested in learning more about nutrition?
(Check One)
- ☐ Strongly Agree
- ☐ Agree
- ☐ No Opinion
- ☐ Disagree
- ☐ Strongly Disagree

C-7. Which of the following would be the best topics to cover in parent Nutrition Education programs?
(Check All That Apply)
- ☐ The Advantages of Eating a Good Breakfast
- ☐ The Advantages of Eating a Good Lunch
- ☐ Food Needs at Different Ages
- ☐ Selection of Snack Foods
- ☐ How Food Affects Physical Development
- ☐ Food Choices of School Age Children
- ☐ School Food Service Contributions to Nutrition
- ☐ Organic Foods
- ☐ Special Diets and Weight Control

C-8. Indicate the method you think would be best for presenting a parent Nutrition Education program
(Check All That Apply)
- ☐ Through Parent-Teacher Organizations
- ☐ On Educational Television
- ☐ In Special Classes for Parents of Students
- ☐ By Articles in Newspapers or Magazines
- ☐ In Special Workshops Presented by University or Department of Public Instruction Personnel

THANK YOU FOR YOUR COOPERATION IN COMPLETING THIS SURVEY

State of Wisconsin DEPARTMENT OF PUBLIC INSTRUCTION

Barbara Thompson, Ph.D.
State Superintendent

Dwight M. Stevens, Ph.D.
Deputy State Superintendent

September 5, 1973

CONTACT: Mrs. Rachel N. Nutter
Program Director
1-608-266-1046

Dear Mr.:

A four-phase survey to determine what is currently being taught in nutrition at all grade levels in Wisconsin public schools has been developed through the combined efforts of members of the Wisconsin Department of Public Instruction, the Wisconsin Division of Health, and the University of Wisconsin. The attitudes and knowledge of representative but randomly selected public school principals and teachers about nutrition education in their schools will be determined. All School Food Service managers and supervisors will be surveyed. Information concerning the food habit patterns of approximately 6,000 Wisconsin public school children will be obtained through the use of a newly developed easily administered food consumption questionnaire.

It is the first time in Wisconsin that a nutrition survey has been made of a statistically reliable representative sample of our public school children, kindergarten through twelfth grade. The surveys will provide basic data essential for the planning and implementation improved nutrition education for school children. Evaluation of the surveys will result in: (1) the development of a nutrition resource book which will be part of the critical health problems education curriculum guide for use by teachers K-12; (2) the provision of data requisite to the improvement of nutrition education for teachers, food service personnel and administrators through seminars, workshop and university continuing education courses.

The schools in your district which will participate in the survey are attached. It is essential that we receive the information from the principals of these schools in order to randomly select students and teachers for the survey:

1. School and district name,
2. The full name of each student in the grades indicated,
3. Each students grade level and/or year in school,
4. The name of each teacher, grade level(s) and subject(s) taught.

Because the food habit survey will involve the same student for three days, it will be necessary to have his name on the three forms. However, the person administering the questionnaire will be instructed to remove the names upon completion of the survey if the student so desires.

We solicit and appreciate your cooperation and interest in this survey.

Sincerely,

Barbara Thompson

Barbara Thompson, Ph.D.
State Superintendent

State of Wisconsin DEPARTMENT OF PUBLIC INSTRUCTION

Barbara Thompson, Ph.D.
State Superintendent

Dwight M. Stevens, Ph.D.
Deputy State Superintendent

Date: September 5, 1973

Memo To: Selected Public School Principals

Subject: Nutrition Education Survey

CONTACT: Mrs. Rachel N. Nutter
Program Director
1-608-266-1046

A request has been made to your district administrator to involve some of the district's students in a federally funded study of nutrition education in Wisconsin. This is the first time that a nutrition survey has been made of a statistically reliable representative sample of Wisconsin public school children, kindergarten through twelfth grade. The survey will provide basic data necessary for planning improved, value oriented nutrition education for school children. Evaluation of the survey will result in the development of a nutrition resource book which will be part of the critical health problems education curriculum guide for use by teachers K-12.

We will be selecting a random sample of students in grades in your school. To make the selection process we need a list of all graders in your building. The roster should contain the following information:

1. The name of your school and district.
2. The full name of each student in the grades listed above.
3. Each student's grade level and/or year in school.
4. The name of each teacher, grade level(s) and subject(s) taught.

We will be alphabetizing students by grade level before making our random selection; so rosters that approximate that order will be the most convenient for us. Feel free to send us computer print-outs or attendance roster lists or other rosters generated for student accounting purposes. Please be sure that the information we need is contained on each roster. Send the rosters to the contact person named in this memo.

We appreciate your cooperation and help in this undertaking.

Sincerely yours,

Barbara Thompson

Barbara Thompson, Ph.D.
State Superintendent

126 Langdon Street, Madison, Wisconsin 53702

State of Wisconsin DEPARTMENT OF PUBLIC INSTRUCTION

Barbara Thompson, Ph.D.
State Superintendent

Dwight M. Stevens, Ph.D.
Deputy State Superintendent

Date: September 25, 1973

Memo To: Selected Public School Principals

Subject: Selection of: (1) a person to administer the student food consumption survey.

Contact: Mrs. Rachel N. Nutter,
Program Director
1-608-266-1046

Information concerning the food habit patterns of public school children is needed as one part of a federally funded survey to determine the current status of nutrition education in Wisconsin. The three-day survey will provide basic data necessary for the planning and implementation of improved, value oriented nutrition education for school children. The survey is a simple 24-hour food recall instrument. It is planned to assess eating patterns and point up possible deficiencies, if any, of certain nutrients. Supplemental, biochemical and clinical measurements may be requested by the Wisconsin Nutrition Council if the dietary results warrant it.

From the current year enrollment figures a statistically reliable, random sample of approximately 6000 students has been selected. You will have students in your school participating. Because of the small number of students selected from each school one adult should be able to administer the survey.

Will you please select a responsible adult who is interested in nutrition or health to administer the survey. Funds have been provided for remuneration for this service. If teacher loads and committments preclude participation in this survey, the selection of the school nurse or guidance counselor are suggested as possible alternatives. If you have no one in your school who can be assigned this task, please call phone number , who will recommend a hospital dietitian or county home economist to perform the survey supervision.

The questionnaires have already been coded with the county, district, school, and student numbers and names. If a student is ill or absent the first day of the survey, do not attempt to replace that student.

All students from your school may fill out the forms at the same time. During the pretest of the survey instrument, approximately one-half hour each of the three days was required by the children to complete the forms. If any of the students selected in your school are in kindergarten through third grade, the adult will need to fill out the form for the child on a one to one basis which will require a longer time.

It will be necessary to obtain the height and weight of each student participating in the survey. Will you please see that accurate scales are available during one day of the survey. You are encouraged to read the instructions to the adult supervisor provided with the forms in order that you may become familiar with all survey requirements.

126 Langdon Street, Madison, Wisconsin 53702

Enclosed is a sample letter for the parents of the students selected from your school. You may change the wording as long as the information remains essentially the same. The parental letter should be mailed immediately. We suggest that no one should know what days the survey will be made in order to prevent changes in menus and individual eating patterns. The survey should be performed on Tuesday, Wednesday and Thursday, , 1973.

Because the forms must be run through the optical scanner, it is imperative that a No.2 lead pencil be used to fill out all forms. Be sure the forms are not folded or stapled. The completed forms should be mailed in the enclosed envelope.

The enclosed services and materials requisition forms should be completed with the number of hours the adult assigned to administer the survey worked. Please note that funds have been included to pay for the pencils. Also, the district purchase order may be mailed with the question forms.

Sincerely,

Barbara Thompson

Barbara Thompson, Ph.D.
State Superintendent

Instructions to Give the Students Who Will Fill
in the Food Intake Questionnaire

1. Explain what the questionnaire is

This is not a test. The questions and answers will tell us what kinds of food you eat each day and when you eat them. You have been randomly selected by computer in Madison to participate in a unique survey. It is the first time in Wisconsin that a food intake survey has been made which is representative of all public school age students! It is the first time that a food intake survey has been made in Wisconsin on optical scanning sheets.

2. Explain "optical scanning" to students if they are not familiar with optical scanning test and answer sheets.

The questions are printed on special paper. The answers are made by filling in a small circle with a soft pencil. The question and answer sheets are run through a machine containing a photo electric light which records the blackened circles on a special computer tape. If the answers are carefully made, about 1500 sheets an hour can be run through the machine. The machine can record only the blackened circles. Your name at the top of each page cannot be recorded. If you wish, I will erase it before I return your questionnaire to Madison.

3. You will be asked to fill out the same questionnaire on three different days. I cannot tell you when the other two days will be. We do not want you to change your normal eating habits because of the questionnaire. The sheets are printed in different colors to help us here at the school. Today your questions will be printed in brown ink.

4. I will now hand out today's questionnaire. Please do not make any marks on the sheets until I have explained how to mark the answers.

5. Read instructions slowly with the students. Are there any questions?

6. Be sure to answer each number in sequence from the top of the page to the bottom. Any smudges made by your hand or arm on a part of the page make errors in the scanning.

7. Please turn to page three. Read with the students the instructions and example at the top of the page. You may want to write the example on the blackboard and go through it again.

8. "Snacks" include all foods eaten at other than regularly designated meal time (between breakfast and lunch, before breakfast, after last evening's meal, between the lunch and evening meal.)

9. Either a "yes" or "no" circle should be filled in for each food group listed and for each meal or snack period on the sheet. If this is not done the optical scanner will reject the question.

10. Please turn to page 4. Refer to number 47 near the bottom of the page. If you do not know what the words "enriched", "iodized", or "iron Fortified" mean, mark the "I don't know" circle. Any questions?

11. You may turn back to page one and begin.

Completing the Forms

These forms have been designed for scoring using an optical scanner which records the data at a rate of approximately 1500 per hour if the forms are correctly marked. The following directions for marking the survey forms should be carefully followed:

1. A #2 lead pencil (provided for the survey) should be used to record all answers. Collect the pencil the first two days. The student may keep the pencil after the final day of the survey. DO NOT USE PEN OR COLORED PENCIL.

2. The forms are identical but are color coded for ease in designating the days to be filled out as follows: Tuesday - Blue; Wednesday - Red; Thursday - Brown.

3. Issue only one questionnaire each day to each student. Write the student's name in pencil at the top of each of the three questionnaires in the space provided. The name is for your use only. It will help you in recording height, weight, age, etc. and in being sure each student receives the form with his or her number on it. The name may be erased, if desired, before the forms are returned to this office.

4. Completely blacken the response circle for each question asked. Blacken each response circle individually. Do not connect circles with continuous lines. Make no other marks on the forms as they may be read by the optical scanner. Caution the students not to make lines or marks other than in the response circles.

5. If necessary to erase circles, do so as thoroughly as possible without damaging the form.

6. Record height and weight measurements in the appropriate spaces on each of the three forms. The school nurse or physical education teacher may be able to assist you in taking these measurements. Identification will be made of children who are over and under weight norms for their height and age, by comparison with other Wisconsin children of the same age and school grade. The child should be dressed in normal indoor clothing only when weighed. Sweaters, jackets and shoes should be removed. Boys should empty their pockets. The height should also be measured without shoes.

7. Record age, grade and sex of each student in the designated spaces on each of the three forms before issuing the forms to the students the first day.

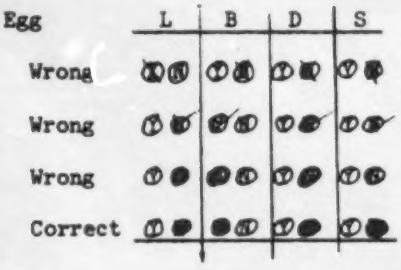
8. Obtain from the principal of your school the names of those students who qualify (according to district income criteria) to receive free lunches. On the questionnaires issued to these students, blacken only the circle adjacent to the letter A in the box on the right at the top of page 1.

9. DO NOT FOLD OR STAPLE ANY OF THE SURVEY FORMS OR THEY WILL NOT RUN THROUGH THE SCANNER PROPERLY.

Completing the Form - (Cont.)

10. There is only one answer for each eating period (L, B, D, S) from numbers 8 to 46. For example, No. 9: If no pudding or custard was eaten at a meal or snack period the (N) circle would be blacked out for lunch, breakfast, dinner and snack period. Many answers will be no. (N). It is important to fill in all "NO" responses, otherwise the scanner will interpret the number as incomplete.

11. Example for filling out the survey questions:



How: The easiest and most accurate method of recall is to start with the most recent meal and work backwards. The survey should be made each day after lunch. Have the child start with lunch today; then work back to recess this morning; breakfast this morning; after supper last night; supper last night; and end with after school or recess yesterday afternoon. Include only those foods actually eaten, not the foods offered or served the child but not consumed. You need not be concerned about the size of the portion of food eaten. The child is asked to record only when the food was eaten.

For example: One-half slice bread with butter and a large orange eaten after dinner would be recorded under "all snacks between meals" as having eaten bread, butter and citrus fruit.

12. When the student turns in the form each day, check it thoroughly before excusing the student. Be sure all questions are answered and circles correctly blacked in; no extraneous marks have been made, etc.

Definition of Terms:

Enriched - If the student questions you about enriched bread products, he probably does not know if these foods used in his home are enriched. He should mark "Don't know." Do not define enriched for him. Enriched bread, as all adults know, are products nutritionally improved by replacing or restoring amounts of thiamine, riboflavin, niacin, and iron removed in the refining processes, and is usually noted on the product.

Iodized - If the student questions you about iodized salt, he probably does not know if the salt used in his home is iodized and should mark his answer "Don't know." Iodized salt contains iodine which everyone needs for normal body functioning. Without enough iodine the thyroid gland tends to enlarge and the enlargement is known as a goiter.

The students may question their parents and record a different answer on the second or third day. This is permissible.

WISCONSIN NUTRITION EDUCATION SURVEY

CHILDREN'S FOOD INTAKE

WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION

BARBARA THOMPSON, Ph.D. – STATE SUPERINTENDENT

UNITED STATES DEPARTMENT OF AGRICULTURE

FOOD AND NUTRITION SERVICE

OMB-40-S76085 APPROVAL EXPIRES 2-28-74

STUDENT NAME

SCHOOL NUMBER

STUDENT	SCHOOL	CO	DISTRICT

STUDENT INFORMATION

GRADE	AGE	HEIGHT	WEIGHT	SEX

DO NOT WRITE IN THIS BOX

INSTRUCTIONS

This is not a test. It is a survey to find out what kinds of foods you and many others like you eat every day. Some of the questions are multiple choice; some just ask for "yes" or "no" answers. Each choice has a circle beside it which you are to fill in if it is your answer. The circle must be filled by a dark glossy mark made by a number 2 pencil. Do not use a ball point or felt tip pen. Do not make any stray marks; mark only in the circles. There is an example below to show you how to mark your answers:

EXAMPLE I: DO YOU LIKE TO EAT SNACKS?

○ YES
● NO

1. Did you eat breakfast today?

○ Yes
○ No

2. If you did eat breakfast, where? (Mark only one)

○ In school breakfast program
○ At home
○ Bought breakfast on way to school
○ Other (specify briefly below) DO NOT WRITE OUTSIDE DOUBLE LINES

3. If you did not eat breakfast, indicate why. (Mark one or more)

○ Did not have time
○ Not hungry
○ Nobody to prepare it
○ Didn't feel good
○ I'm on a diet
○ Food not available
○ Didn't like what was served

NCS Trans-Optic F1883-84321

4. Did you eat lunch today?

- ○ Yes
- ○ No

5. If you did not eat a Type A school lunch today, indicate why. (Mark one or more)

- ○ Not available
- ○ Didn't like what was served
- ○ Wait in line too long
- ○ Food cold
- ○ Cooks are grouchy
- ○ Costs too much
- ○ Lost money
- ○ I'm on a diet

6. How long is your lunch period? (Mark one)

- ○ Less than 20 minutes in length
- ○ 20 minutes
- ○ 20 to 30 minutes
- ○ 30 to 40 minutes
- ○ More than 40 minutes

7. Is the dining area in your school:

A. Clean?

- ○ Yes
- ○ No

B. Attractively painted?

- ○ Yes
- ○ No

C. Well lighted?

- ○ Yes
- ○ No

D. Decorated with posters, etc., for special occasions?

- ○ Yes
- ○ No

E. Too crowded for comfortable eating?

- ○ Yes
- ○ No

ANSWER THE FOLLOWING QUESTION BY MARKING "Y" OR "N" FOR EACH MEAL. Y=YES N=NO

Did you eat these foods at the times mentioned?	TODAY'S LUNCH		TODAY'S BREAKFAST		LAST EVENING'S MEAL		SNACKS	
	YES	NO	YES	NO	YES	NO	YES	NO
EXAMPLE 2: ICE CREAM	Ⓨ	●	Ⓨ	●	●	Ⓝ	Ⓨ	●
8. Milk, any kind - including cocoa and egg nog.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
9. Pudding or custard.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
10. Ice cream or milk shakes.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
11. Cheese, any kind - including cottage cheese or yogurt.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
12. Pork, lamb, beef, veal or liver.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
13. Chicken, turkey or other poultry.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
14. Fish, any kind.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
15. Egg.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
16. Cooked dried peas or beans.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
17. Peanut butter.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
18. Luncheon meat, wieners, brats or sausages.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
19. Nuts, any kind.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
20. Stew or meat pie, pizza, spaghetti, noodles, macaroni or rice dish with meat or fish (combination).	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
21. Citrus fruit juice (orange, grapefruit) or (1) orange or (½) grapefruit.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
22. Strawberries or cantaloupe, fresh or frozen.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
23. Tomatoes, any kind, or coleslaw, raw green pepper.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
24. Any of the following fruit drinks: Tang, Hi C, Awake, Del Monte Fruit Drink.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
25. Other fruit drinks.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
26. Apricots, any kind.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
27. Carrots, any kind, sweet potato or yams, pumpkin, yellow squash.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
28. Greens - spinach, beet greens, turnip greens, mustard greens, collards, dandelion greens.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
29. Broccoli.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ
30. Peaches, watermelon, canned purple plums.	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ	Ⓨ	Ⓝ

CONTINUED ON NEXT PAGE

	TODAY'S LUNCH		TODAY'S BREAKFAST		LAST EVENING'S MEAL		SNACKS	
	YES	NO	YES	NO	YES	NO	YES	NO
31. Green peas, asparagus.	Y	N	Y	N	Y	N	Y	N
32. Raisins, prunes, or dried fruit.	Y	N	Y	N	Y	N	Y	N
33. White potatoes, including french fries.	Y	N	Y	N	Y	N	Y	N
34. Bread, buns, biscuits, any kind.	Y	N	Y	N	Y	N	Y	N
35. Only the following dry cereals: Total, Special K, Product 19, Kaboom, Fortified Oat Flakes, Raisin Bran, Concentrate, 40% Bran Flakes, Buc Wheats	Y	N	Y	N	Y	N	Y	N
36. Other cereal, dry or cooked.	Y	N	Y	N	Y	N	Y	N
37. Rice, noodles, spaghetti, macaroni without meat, poultry or fish.	Y	N	Y	N	Y	N	Y	N
38. Pop, soda, soft drink.	Y	N	Y	N	Y	N	Y	N
39. Potato or corn chips, pretzels and other similar snack items.	Y	N	Y	N	Y	N	Y	N
40. Crackers, such as Saltines, Graham, Soda, and similar items.	Y	N	Y	N	Y	N	Y	N
41. Doughnuts, sweet rolls, cookies, cake.	Y	N	Y	N	Y	N	Y	N
42. A. Fruit pies.	Y	N	Y	N	Y	N	Y	N
B. Custard or cream pies.	Y	N	Y	N	Y	N	Y	N
43. Gum, sugar coated; candy, chocolates, mints, ice cream toppings.	Y	N	Y	N	Y	N	Y	N
44. Jam, jelly, syrup, honey.	Y	N	Y	N	Y	N	Y	N
45. Margarine or butter.	Y	N	Y	N	Y	N	Y	N
46. Coffee or tea.	Y	N	Y	N	Y	N	Y	N

	I DON'T KNOW	YES	NO
47. A. Are the bread products used in your home enriched?	○	○	○
B. Is the table salt used in your home "Iodized?"	○	○	○
C. Do you take vitamins?	○	○	○
D. Are the vitamins you take iron fortified?	○	○	○

48. If you are a high school student, do you consume beer, wine or liquor?

○Never
○Occasionally
○Daily